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URTICARIA

IV. WHEAL FORMATION ON ABNORMAL SKINS *

ABRAHAM WALZER, M.D.

BROOKLYN

Our previous reports on experimental wheals produced through internal channels [1] disclosed the fact that such wheals could be produced on most persons with normal skins, by the intradermal injection of serums of certain patients hypersensitive to food, and then feeding these tested subjects the specific offending food. Three types of serums have been employed in these investigations, one sensitive to fish, the second to egg and the third to pistachio nuts. The method of obtaining the serum from the hypersensitive patient was fully discussed in these papers, and all details relative to the production of the wheal were presented.

All experimental observations indicated that the offending substance in the ingested food gained access into the circulation by way of the gastro-intestinal tract in an unaltered state, and was carried in such form to the passively sensitized site.[2] As a result of the interaction between the antigen (the circulating protein of the offending food) and the reagins (deposited with the serum) at the sensitized site, the wheal, the characteristic manifestation of urticaria, was locally produced.

Practically all the variations of cutaneous symptoms clinically observed in constitutional urticaria have been reproduced in these experiments. The various degrees of pruritus from the slightest local irritation to an almost unbearable itch were noted. Two types of erythema associated with these reactions were described. Type 1 consisted of an erythematous macule at the exact site of the injection, which was surrounded by a secondary erythema, producing the effect of a

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* From the Department of Dermatology and Syphilology, Good Samaritan Dispensary, New York, and the Jewish Hospital of Brooklyn.

1. Walzer, A., and Walzer, M.: Studies in Urticaria: I. Wheal Production Through Internal Channels, Am. J. M. Sc. **173**:279, 1927; Urticaria: II. The Experimental Wheal Produced on Normal Skin Through Internal Channels, Arch. Dermat. & Syph. **17**:659 (May) 1928.

2. Walzer, M.: Studies in Absorption of Undigested Proteins in Human Beings: I. A Simple Direct Method of Studying the Absorption of Undigested Protein, J. Immunol. **16**:143, 1927. Brunner, M., and Walzer, M.: Absorption of Undigested Proteins in Human Beings, Arch. Int. Med. **42**:172 (Aug.) 1928. Sussman, H.; Davidson, A., and Walzer, M.: Absorption of Undigested Proteins in Human Beings, Arch. Int. Med. **42**:409 (Sept.) 1928.

central nucleus in the erythematous field. Type 2 erythema was a single, irregular, circinate and diffuse erythematous patch. Surrounding each type of erythema were the erythematous puncta.

The various forms of wheals were minutely described and illustrated. Type 1 wheal, which always included the site of injection in its complete development, was subdivided into three forms, depending on its mode of onset and formation. A completed reaction of this type always showed a centrally located wheal covering the site of injection and surrounded by an erythema. Type 2 wheal formed around and away from the site of injection and never included it when fully developed. The wheal was, in other words, eccentrically situated as regards the site of injection, but also within an erythematous area. The latter type, a hitherto undescribed experimental wheal, was the most unusual feature noted in these experiments.

All factors which influenced the development of the reactions, in size, degree or rapidity of formation, were presented. It was shown that all these factors could be grouped under three main heads: (1) factors affecting the local sensitization of the site, (2) those influencing the absorption of the offending food and (3) those concerned with the variation in technic. Each factor was discussed in detail.

PREVIOUS WHEAL EXPERIMENTS ON ABNORMAL SKINS

The experimental production of wheals of constitutional origin on abnormal dermatologic lesions has not been previously reported. Some work, however, has been published on the formation of wheal reactions on abnormal skins by purely local intradermal injections of various substances, by trauma and other external means.

Ebbecke [3] said that in cutaneous scars, "the local vasomotor reaction" (the local erythema, whealing, and so forth, following various stimuli) is absent regardless of whether the scars are fresh or old, and in spite of the fact that scars appear to have many blood vessels.

Pilcher [4] studied wheal formation by the intradermal injection of solutions of codeine in sick as well as in normal children. He found that wheals were lessened in all cases of edema, whether caused by nephritis, cardiac decompensation, leukemia and so forth, and also on fully formed or fading wheals of urticaria. Scleroderma and sclerema in infants also caused diminished wheal formations.

Lewis,[5] experimenting with histamine solution injected into the skin, produced wheals in a number of dermatologic conditions. In

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3. Ebbecke, U.: Die lokale vasomotorische Reaktion (L. V. R.) der Haut und der inneren Organe, Arch. f. d. ges. Physiol. **169**:1, 1919.

4. Pilcher, J. D.: Wheal Formation in Infants and Children, Am. J. Dis. Child. **31**:96 (Jan.) 1926.

5. Lewis, T.: Vascular Reaction of the Skin to Injury: IV. An Irresponsive Condition of the Vessels with Special Reference to the Pathology of Telangiectasis and Allied Conditions, Heart **13**:153, 1926.

erythema ab igne, he obtained poor wheals. In telangiectasia from various causes, Lewis found that intradermal injections of histamine will produce no wheal or one greatly reduced in size.

Lewis and Zotterman [6] induced the histamine wheal reaction on "annular oedema" lesions on the lower extremities of a patient with infective endocarditis. They found that on the ringed edematous lesion wheals smaller in size than controls on normal skin were the result, while within the central flattened area of the lesion, the wheals were either slight or absent.

Hare,[7] employing the same technic as Lewis, experimented with three patients, two sensitive to horse serum and one sensitive to pollen. He found that the sites of the wheals induced by the injections of the offending protein would not respond with a wheal to a subsequent injection of histamine, and vice versa.

As a result of these experiments, together with many others by his associates and himself, Lewis [8] concluded as follows: "If the skin is so damaged that it becomes red and oedematous, then, when the oedema has subsided but deep redness persists, the skin remains for some while refractory, in the absolute or relative sense, to a repetition of the same stimulus, or to any stimulus that produces a similar original lesion on control skin." By this Lewis implied that on a skin site which has been the seat of a wheal, or a reaction of a similar nature (erythema, edema) of whatever cause, wheals subsequently induced within a certain period will be smaller than the previous one, or none will develop. To this state or condition which exists at such a skin site, Lewis and his associates have applied the term "refractoriness."

Earlier workers experimenting along this line from different angles have reported a phenomenon of similar nature, but they did not apply it in the broad sense with which the term "refractoriness" is employed by Lewis and his associates. Jadassohn and Rothe,[9] in their experiments on the induction of wheals with morphine and atropine, stated that repeated injections of these drugs into the same sites diminished and finally abolished the reactivity of these sites.

Mackenzie and Baldwin,[10] working on the question of local desensitization in hypersensitive subjects, said that in such persons the cutaneous

6. Lewis, T., and Zotterman, Y.: Vascular Reaction of the Skin to Injury: V. Annular Oedema of the Skin in a Case of Infective Endocarditis, Heart **13**:193, 1926.

7. Hare, R.: An Experimental Investigation into the Vascular Reaction of the Susceptible Skin to Protein, Heart **13**:227, 1926.

8. Lewis, T.: The Blood Vessels of the Human Skin and Their Responses, London, Shaw & Sons, 1927.

9. Jadassohn, J., and Rothe, L.: Zur Pathogenese der Urticaria, Berl. klin. Wchnschr. **51**:519, 1914.

10. Mackenzie, G. M., and Baldwin, L. B.: Local Desensitization in Hypersensitive Individuals and Its Bearing on the Prevention of Hayfever, Arch. Int. Med. **28**:722 (Dec.) 1921.

reaction, the wheal, may be abolished by repeated injections of the specific offending antigen to the same site—a fact which they attributed to the local neutralization of antibodies. They also experimented with wheals produced by histamine, and they noted that these wheals, which are not based on an antigen-antibody mechanism, became progressively larger with the repetition of the application of histamine to the same site. Their conclusions, however, were not confirmed by Cooke [11] and his associates, who denied the possibility of "local desensitization." They induced wheals with an extract of horse epithelium in a person sensitive to this substance. They noted that the reactions resulting from the first two or three successive injections of the same quantity of the offending substance into the same sites produced marked reactions. Succeeding injections, however, resulted in smaller reactions and finally a complete exhaustion of the site. It was then demonstrated that this refusal of that site to wheal applied not only to horse epithelium, but to other atopens to which the patient was sensitive, indicating not a local specific neutralization of antibodies, but a fatigue of the local tissues. They also induced wheals with histamine and peptone and found that the results following repeated injections of these substances were the same as those in the hypersensitive person, namely, a temporary exhaustion of the power of the tissues to respond to irritation.

It will be noted that all these workers had produced wheals of external origin on abnormal skins of two types of subjects: (1) patients with dermatologic diseases as scars, scleroderma, and so forth, and (2) subjects with normal skins but in whom an abnormal skin site was established by the production of local wheals, the sites of these wheals being subsequently employed for further tests. Some of the workers, Hare, Mackenzie and Baldwin and Cooke, employed hypersensitive subjects, so that their wheals, though local in origin, depended on a constitutional predisposition of the person.

THE PROBLEM

Continuing our studies on wheal formation, certain clinical observations on urticaria impressed us. Why is urticaria so rarely associated with the various dermatologic diseases? Why are wheals so infrequently seen on the various lesions of the skin? The following problems therefore presented themselves. Could hypersensitive wheals of internal origin be produced in abnormal dermatologic conditions? In other words, could reagins be fixed, and would they still be potent, if deposited in an epidermis acutely or chronically inflamed, or in cells foreign to the

11. Cooke, R. A.: Studies in Specific Hypersensitiveness: IX. On the Phenomenon of Hypersensitization (the Clinically Lessened Sensitiveness of Allergy), J. Immunol. **7**:219, 1922.

normal skin? What would be the effect on the wheal formation if reagins were deposited in normal epidermis but with an abnormal cutis or subcutis, so that the circulating antigen, to reach the reagins fixed at the injected site, would have to pass through diseased or altered capillaries? Could a state of refractoriness of the cutaneus vessels be demonstrated in various abnormal dermatologic conditions with our technic?

Patients who illustrated different types of abnormal skins suitable for investigating these phases of the questions were accordingly selected, as indicated in table 1.

The technic followed in these subjects was the same as previously employed on normal skin. The abnormal skin site of the subject chosen

TABLE 1.—*Diseases Employed in the Tests*

	Disease	Number Tested, Patients	Results	
			Positive	Negative
1	Urticaria	2	1	1
2	Angioneurotic edema	1	1	..
3	Phenolphthalein eruption	1	1	..
4	Erythema multiforme (Hebra)	1	1	..
5	Annular infiltrated erythema	1	1	..
6	Papulovesicular dermatitis	1	1	..
7	Pemphigus	3	3	..
8	Psoriasis	3	3	..
9	Lichen planus	2	2	..
10	Lichen disseminatus with dermatitis exfoliativa	1	1	..
11	Granuloma annulare	1	1	..
12	Chronic urticaria with lichenoid dermatitis	1	..	1
13	Lupus vulgaris	1	1	..
14	Lupus verrucosus	1	1	..
15	Scleroderma	1	1	..
16	Scar	2	2	..
17	Keloid	1	1	..
18	Ichthyosis	1	1	..
19	Acrodermatitis atrophicans	3	2	1
20	Raynaud's disease	1	1	..
	Total	29	26	3

for study was cleansed with alcohol, and about from 0.05 to 0.1 cc. of the sensitizing serum was injected intradermally. In some of the patients, especially those with atrophia cutis, intradermal injections were for obvious reasons rather difficult, and while they may not have been altogether intradermal, they were nevertheless close to the epidermis. In every one of the subjects, local sensitization was also performed on normal skin sites, whenever possible, for controls. One of the three sensitizing serums used in previous studies was employed in each of the subjects. The feeding of the offending food was always done from twenty-four to forty-eight hours after the local passive sensitization.

Table 2 gives a list of the abnormal skin conditions employed in these tests, together with a summary of the reactions noted at each individually sensitized site.

TABLE 2.—*Resulting Reactions*

Number	Name	Disease	Sensitized Sites	Pruritus, Minutes	Onset* of Erythema, Minutes	Wheal, Minutes	Comment
1	S. K.	Urticaria	Normal: †				
			Left arm.....	..	..	..	No reaction
			Left side of chest..	..	..	..	No reaction
			Diseased:				
			Right arm, on a wheal	..	..	..	No reaction
			Left side of chest, on a past wheal site	..	..	..	No reaction
2	G. L.	Annular urticaria	Normal:				
			Left arm..... (fig. 1, no. 1)	15	17	18	Erythema type 2; wheal type 1
			Diseased:				
			Chest, on an annular wheal (fig. 1, no. 3)	..	..	29	Erythema not differentiated; wheal type 1
			Chest, on an annular wheal (fig. 1, no. 5)	..	..	29	Erythema not differentiated; wheal type 1
			Chest, on a past wheal site (fig. 1, no. 7)	15	18	19	Erythema not differentiated; wheal type 1
3	B. W.	Angioneurotic edema	Normal:				
			Right arm (fig. 2, no. 1)	25	20	29	Erythema type 2; wheal type 1
			Diseased:				
			Left arm, on past edema (fig. 2, no. 2)	36	26	35	Erythema type 1; wheal type 1
4	M. S.	Phenolphthalein eruption	Normal:				
			Left arm.....	15	15	17	Erythema type 1; wheal type 1
			Diseased:				
			Right arm, on a lesion	15	..	18	Erythema not differentiated; wheal type 1
5	R. S.	Erythema multiforme (Hebra)	Normal:				
			Forearm..... (fig. 3, no. 1)	9	10	12	Erythema type 1; wheal type 1
			Hand, dorsum..... (fig. 3, no. 3)	16	9	21	Erythema type 2; wheal type 1
			Diseased:				
			Dorsum of hand within a lesion (fig. 3, no. 2)	21	22	23	Erythema not differentiated at start, but in 22 minutes; wheal type 1
6	S. R.	Annular infiltrated erythema	Normal:				
			Chest..... (fig. 4, no. 1)	7	13	13	Erythema type 2; wheal type 1
			Diseased:				
			Chest, on erythema (fig. 4, no. 2)	4	5	4	Erythema not differentiated at start; surrounding erythema in 5 minutes; wheal type 1
			Chest, on past erythematous site (fig. 4, no. 3)	13	13	13	Erythema type 2; wheal type 1
7	E. K.	Papulovesicular dermatitis	Normal:				
			Forearm (fig. 5, nos. 1 and 2)	20	20	34	Erythema type 2; wheal type 2
			Diseased:				
			Arm, on lesion..... (fig. 5. no. 3)	24	25	25	Erythema type 2; wheal type 2
			Forearm, on lesion (fig. 5, no. 4)	15	24	24	Erythema type 2; wheal type 2
			Forearm, on lesion (fig. 5, no. 5)	14	24	20	Erythema type 2; wheal type 1
8	I. S.	Pemphigus	Normal:				
			Left arm.....	11	12	13	Erythema type 2; wheal type 1
			Diseased:				
			Right arm, on past lesion	12	13	14	Erythema type 2; wheal type 1

* All time was reckoned from the ingestion of the offending food.
† The term "normal" here implies a site with no obvious pathologic changes.

TABLE 2.—*Resulting Reactions—Continued*

Number	Name	Disease	Sensitized Sites	Pruritus, Minutes	Onset* of Erythema, Minutes	Wheal, Minutes	Comment
9	S. R.	Pemphigus	Normal:				
			Left arm.....	19	19	25	Erythema type 2; wheal type 1
			Diseased:				
			Chest on past lesion	15	15	19	Erythema type 2; wheal type 1
10	E. Z.	Pemphigus	Normal:				
			Left arm.....	8	15	17	Erythema type 2; wheal type 1
			Diseased:				
			Right arm, on past lesion (fig.6, nos. 1, 2 and 3)	16	19	20	Erythema type 2; wheal type 1; the secondary edema appeared in 25 minutes
11	A. J.	Psoriasis	Normal:				
			Left forearm.....	21	28	30	Erythema type 2; wheal type 1
			Diseased:				
			Right forearm.....	28	..	50	Erythema not differentiated; wheal type 1
12	A. E.	Psoriasis	Normal:				
			Left leg.....	29	35	41	Erythema type 2; wheal type 1
			Diseased:				
			Right leg, on lesion	32	..	48	Erythema not differentiated; wheal type 1
13	A. S.	Psoriasis	Normal:				
			Right forearm (fig. 7, nos. 1, 2, 3)	95	95	100	Erythema type 2; wheal type 1
			Diseased:				
			Left forearm (fig. 7, nos. 4, 5, 6)	100	113	113	Erythema noted was around the patch of psoriasis; wheal type 1
14	A. R.	Lichen planus	Normal:				
			Right forearm.....	11	11	15	Erythema type 2; wheal type 1
			Diseased:				
			Left forearm, within a group of lichen papules	11	..	14	Erythema not differentiated; wheal type 1
15	A. D.	Lichen planus	Normal.....	..	..	..	No normal site
			Diseased:				
			Left arm.....	165	165	180	Marked increase in erythema at 165 minutes; wheal type 1
16	Y. H.	Lichen disseminatus with dermatitis exfoliativa	Normal.....	..	..	..	No normal site
			Diseased:				
			Right arm.....	65	..	83	Erythema not differentiated; wheal type 1
17	W. M.	Granuloma annulare	Normal:				
			Right forearm (fig. 8, no. 1)	13	14	17	Erythema type 2; wheal type 1
			Left hand, dorsum (fig. 8, no. 2)	..	17	22	No pruritus differentiated; erythema type 2; wheal type 1
			Diseased:				
			Right hand, dorsum (fig. 8, no. 3)	14	23	18	Erythema not differentiated; surrounding erythema in 23 minutes; wheal type 1
			Left hand, dorsum, in center of lesion (fig. 8, no. 4)	12	21	20	Erythema not differentiated; surrounding erythema in 21 minutes; wheal type 1

* All time was reckoned from the ingestion of the offending food.

TABLE 2.—*Resulting Reactions—Continued*

Number	Name	Disease	Sensitized Sites	Pruritus, Minutes	Onset* of Erythema, Minutes	Wheal, Minutes	Comment
18	B. R.	Chronic urticaria with lichenoid dermatitis	Normal: Left arm.....	..	..	..	No reaction
			Diseased: Right arm, on a wheal	..	..	..	No reaction
19	F. N.	Lupus vulgaris	Normal: Left thigh.....	10	10	13	Erythema type 2; wheal type 1
			Diseased: Left thigh, within a lesion	10	25	..	Erythema a deep red; no wheal but a distinct paleness of site in 30 minutes
20	J. W.	Lupus verrucosus	Normal: Right buttock..... (fig. 9, no. 1)	20	20	21	Erythema type 2; wheal type 1
			Diseased: Left buttock, on lesion (fig. 9, no. 2)	19	31	..	No wheal, but a marked increase in the local erythema in 31 minutes and later definite paleness of site
21	G. L.	Scleroderma	Normal: Chest (fig. 10, no. 1)	13	13	15	Erythema type 2; wheal type 1
			Diseased: Chest on lesion.... (fig. 10, no. 2)	13	18	16	Erythema not differentiated at start, but in 18 minutes definite; wheal type 1
22	S. C.	Scar	Normal: Chest, back..... (fig. 11, no. 1)	13	15	23	Erythema type 2; wheal type 1
			Diseased: Chest, back, on scar (fig. 11, no. 2)	16	17	30	Erythema began as type 1; later developed in patches; wheal type 1
23	L. B.	Scar	Normal: Right thigh.....	8	10	11	Erythema type 2; wheal type 1
			Diseased: Left thigh, on lesion	10	18	15	Erythema not differentiated at start; definite erythema in 18 minutes and also around scar; wheal type 1
24	S. F.	Keloid	Normal: Right shoulder..... (fig. 12, no. 3)	21	21	24	Erythema type 2; wheal type 1
			Diseased: Left shoulder..... (fig. 12, no. 2)	22	28	46	Erythema type 2; wheal type 1
25	N. T.	Ichthyosis	Normal.....	..	..	..	No normal skin site
			Diseased: Right arm..... ..	6	15	20	Erythema type 2; wheal type 1
26	M. L.	Acrodermatitis atrophicans	Normal: Right arm..... (fig. 13, no. 3)	20	23	40	Erythema type 2; wheal type 1
			Diseased: Left thigh, inner surface (fig. 13, no. 1)	10	..	15	Injection subcutaneously; erythema not differentiated; wheal type 1
			Left thigh, outer surface (fig. 13, no. 2)	23	23	45	Erythema type 2; wheal type 1

* All time was reckoned from the ingestion of the offending food.

TABLE 2.—*Resulting Reactions—Continued*

Number	Name	Disease	Sensitized Site	Pruritus, Minutes	Onset* of Erythema, Minutes	Wheal, Minutes	Comment
27	B. P.	Acrodermatitis atrophicans	Normal:				
			Right arm.....	10	10	12	Erythema type 2; wheal type 1
			Diseased:				
			Right thigh.....	12	..	22	Erythema not differentiated; wheal type 1
28	R. G.	Acrodermatitis atrophicans	Normal:				
			Right forearm.....	..	..	..	No reactions
			Diseased:				
			Left forearm.....	..	..	..	No reactions
			Left hand, dorsum	..	..	..	No reactions
			Right hand, dorsum	..	..	..	No reaction
29	R. S.	Raynaud's disease	Normal:				
			Right arm.....	8	10	11	Erythema type 2; wheal type 1

* All time was reckoned from the ingestion of the offending food.

It will be noted from table 2 that there were in all twenty various dermatologic diseases in twenty-nine patients, of whom twenty-six responded with reactions at the passively sensitized sites.

THE REACTIONS ON ABNORMAL SKINS

The reactions which formed on the diseased sites usually followed the same course of development as those on the normal skin. The first sign of the oncoming wheal was a localized pruritus, soon followed by an erythema. If the reaction was developing on an erythematous lesion, there was often an appreciable increase in the intensity of the localized redness. In some instances, due to either extreme redness of the diseased site, or the mildness of the developing reaction, neither could the erythema of the oncoming wheal be distinguished from the erythema of the diseased site, nor could a differentiation between the nuclear type (type 1) and the diffuse form (type 2) of erythema be made. If the seat of the reaction was on a small abnormal lesion, the developing erythema often enveloped the entire diseased patch for some distance. When sensitization had been performed within a large lesion, but close to the border, there was not only a localized increase of the redness at the sensitized site, but often an erythema developed on the adjoining normal skin. In a few instances, as in our previous experiments on normal skins, the erythematous changes preceded the pruritus.

With further progress of the reaction, a slight localized induration, the beginning wheal, could be more often felt rather than seen at the site of injection. As the reactions advanced, and with the gradual increase of the edema, the wheal became more prominent, and slowly changed from a dark red to a pale pink. When complete, therefore, in the majority of cases, a reaction on a diseased site consisted of a distinctly elevated, pale pink wheal, surrounded by a faint, but nevertheless, a definitely deeper red halo, with or without an erythema on the adjacent normal skin, and usually accompanied by pruritus.

When the reactions on the diseased sites are compared with their controls on the normal skins, it can be stated as a general rule that the former reactions were neither as active nor as rapid in their onset or development, nor were they as large. There were, however, some reactions on the abnormal sites that showed marked variations from the usual type. They will be discussed shortly.

For the purpose of the present discussion, all diseased lesions on the subjects which were the sites of testing can be generally divided into the following groups: (1) the acute exudative inflammatory dermatoses, (2) the chronic inflammatory dermatoses, (3) the noninflammatory dermatoses and (4) skin atrophy. The patient with Raynaud's disease will be discussed separately.

The Acute Exudative Inflammatory Dermatoses.—These include urticaria, angioneurotic edema, phenolphthalein eruption, erythema multiforme (Hebra), annular infiltrated erythema, papulovesicular dermatitis and pemphigus.

With the exception of a case of urticaria, they all gave positive reactions, manifesting pruritus to a variable degree, and an erythema of either the nuclear or the diffuse type. The wheals were of the central or type 1, except in the patient with the papulovesicular dermatitis, who also demonstrated an eccentric or type 2 wheal.

In the patient with annular urticaria, the wheal produced within the rings of the original urticaria and the wheal at the site of a recently past annular urticarial lesion were smaller and slower in formation than the control reaction on normal skin (fig. 1). The erythema of the experimental wheal reaction could not be differentiated from that of the original annular wheal.

In the patient with angioneurotic edema, local sensitization was performed on a site where the patch of angioneurotic edema had just about disappeared. As will be noted (fig. 2), the reaction, while a good one, was somewhat smaller than its control and was slower in its onset and development.

The wheals on the patient with the phenolphthalein eruption were practically alike on both normal and abnormal sites, though the erythema of the reaction on the abnormal site could not be distinguished from the red of the diseased patch.

In the patient with erythema multiforme, two reactions were produced on the back of the hand, one within the center of a ringed lesion of multiform erythema, and the other, the control, on normal skin. While they were both practically of the same size, the one on the diseased site was slower in development. The other control wheal reaction produced on the forearm, however, was larger than either of those on the dorsum of the hand (fig. 3). This is not an unusual phenomenon, for, as stated previously,[1] it had been noted that in the normal skin the wheals on the

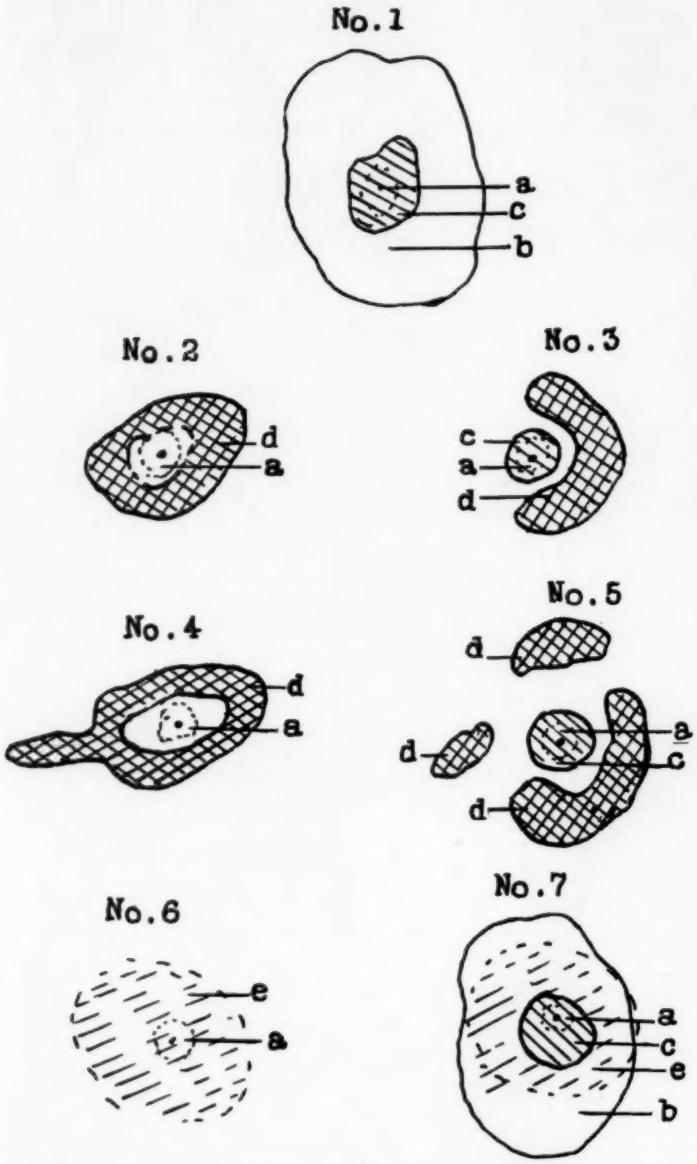

Fig. 1.—Annular urticaria. No. 1 shows the reaction on normal skin on the left arm; Nos. 2 and 4, annular wheals with the sites of injection, on the chest; Nos. 3 and 5, the remains of the annular wheals on the chest, the next day, with the induced wheal reaction; No. 6, a pigmented patch on the chest and the site of injection, and No. 7, the wheal reaction on the pigmented patch: *a* represents the site of injection; *b*, the erythema; *c*, the wheal; *d*, the annular wheal, and *e*, the pigmented patch.

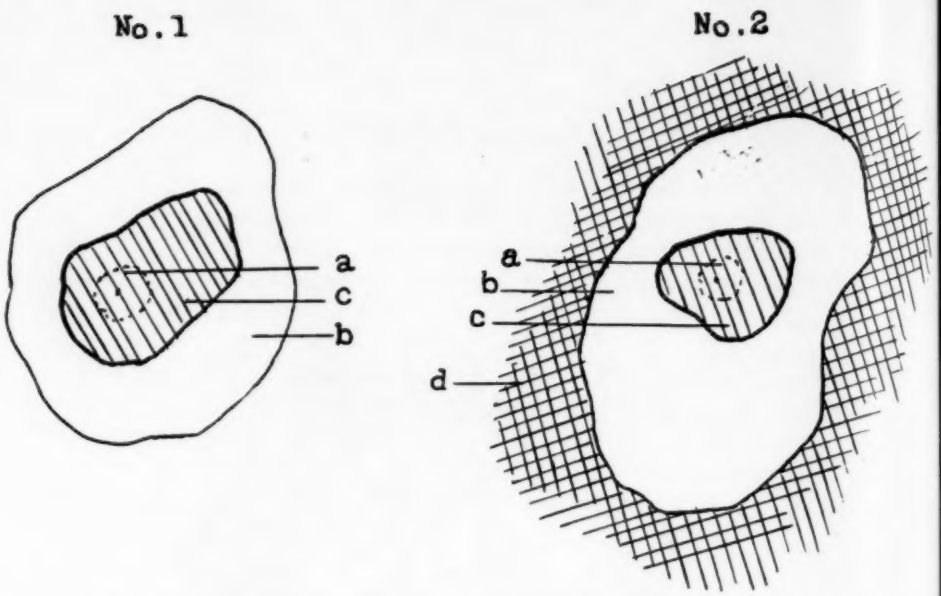

Fig. 2.—Angioneurotic edema. No. 1 shows the reaction on normal skin on the right arm, and No. 2, the reaction on the lesion of angioneurotic edema on the left arm. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the lesion of angioneurotic edema.

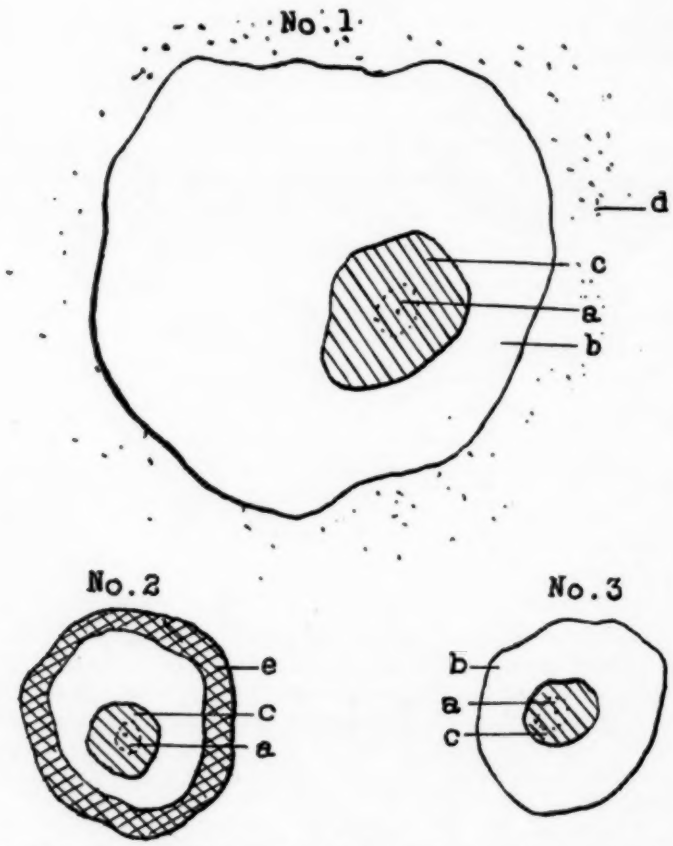

Fig. 3.—Erythema multiforme. No. 1 shows the reaction on normal skin on the forearm; No. 2, the reaction within an annular lesion on the back of the hand, and No. 3, the reaction on normal skin on the back of the hand. *a* represents the site of injection; *b*, the erythema; *c*, the wheal; *d*, the punctate erythema, and *e*, the multiform erythema lesion.

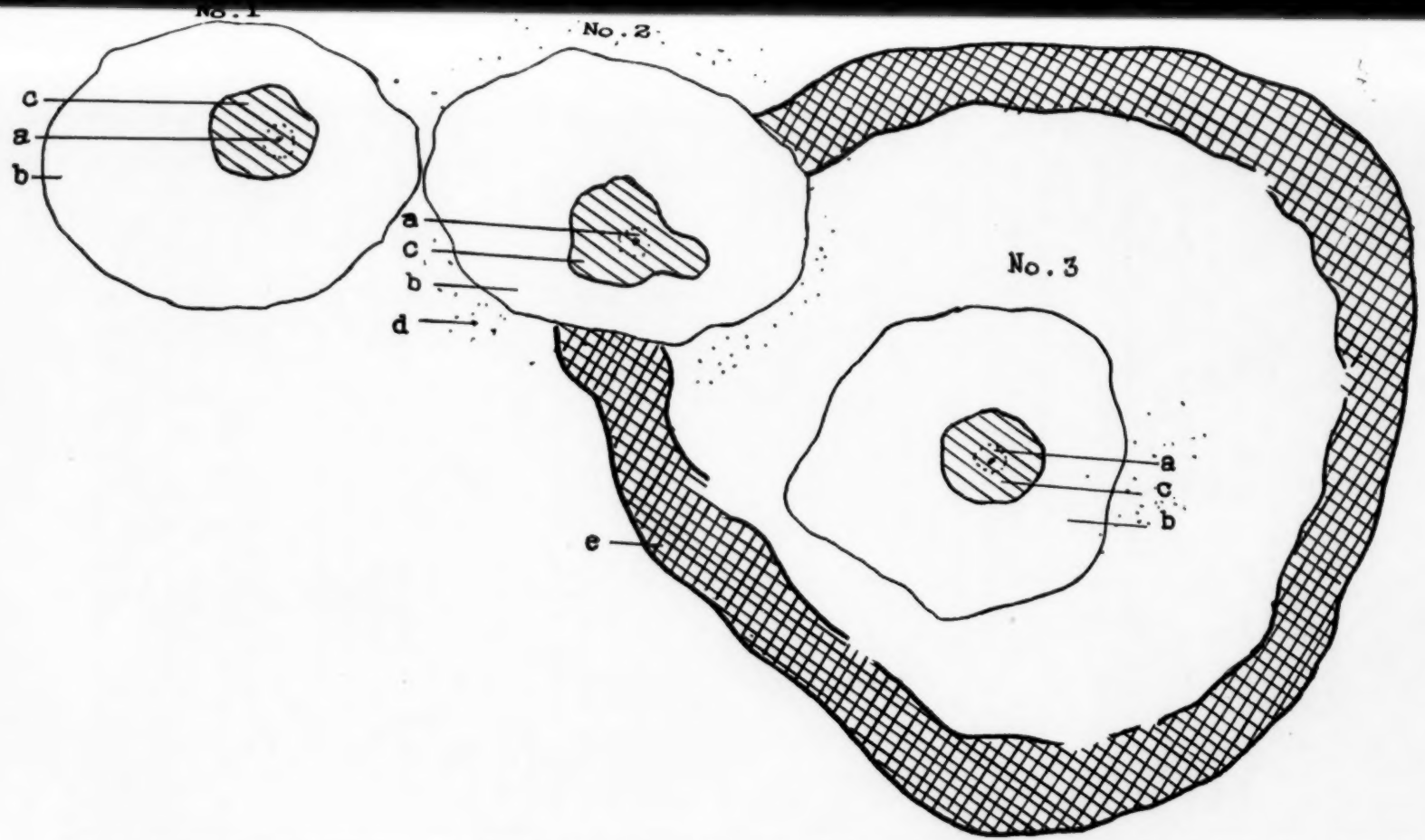

Fig. 4.—Annular infiltrated erythema. No 1 shows the reaction on normal skin on the chest; No. 2, the reaction on the lesion, and No. 3, the reaction within the lesion. *a* represents the site of injection; *b*, the erythema; *c*, the wheal; *d*, the punctate erythema, and *e*, the annular infiltrated erythema.

trunk, thighs and arms were larger than those on the forearms and legs, which in turn were larger than those on the hands and feet.

In the patient with annular infiltrated erythema (fig. 4), the reaction was more pronounced on the lesions, and more rapid in its development than that either on the normal skin or at the site of the past lesion. The wheal also showed a distinct pseudopod and was more elevated than the control.

The patient with the papulovesicular dermatitis was the only one of the entire series who gave the type 2 wheal. As will be seen from the tracing (fig. 5), four sites were sensitized, number 1 on normal skin and numbers 3, 4 and 5 on lesions. Immediately following the injection of the serum at site 1, a wheal developed which persisted for a short while.[12] The other sensitized sites, all on abnormal locations on the skin, did not show any reaction following the intradermal injection of the serum.

The following day, all the sensitized sites showed no changes as a result of the injections. After the ingestion of the offending food, a definite eccentric wheal (type 2) resulted on the normal site (nos. 1 and 2, fig. 5), and on two of the diseased sites (nos. 3 and 4, fig. 5). The other site (no. 5, fig. 5) showed a central or type 1 wheal. All the wheals on the abnormal sites were smaller, though somewhat more rapid in formation than the control.

The patients with pemphigus all showed good reactions whether produced on the sites of past bullae, or on the unaffected skin. One patient with pemphigus, however, showed a reaction somewhat different from the usual type of wheals. As will be noted from the tracing (fig. 6), there was an additional deep-seated edema which developed around the wheal. It was not as indurated, nor did it have the pinkish-white color of the central wheal. It apparently developed as a distinct additional symptom, persisted and regressed as such with the rest of the reaction.

The Chronic Inflammatory Dermatoses.—The chronic inflammatory diseases of the skin that were tested include psoriasis, lichen planus, lichen disseminatus with a dermatitis exfoliativa, granuloma annulare, chronic urticaria with lichenoid dermatitis, lupus vulgaris and lupus verrucosus. Positive reactions were obtained in all of these conditions

12. It has been noted that wheals will occasionally result in certain persons following the intradermal injection of the sensitizing serum on normal sites. This was especially true if the serum was old. E. H. Chant and L. N. Gay (Bull. Johns Hopkins Hosp. **40**:63, 1927) observed similar phenomena and have reported that aging of the human serum as well as heating it, and so forth, may so modify it that whealing may follow its intradermal injection. We have not, however, noted such reactions to follow the intradermal injections of serum into diseased skin sites here experimented with.

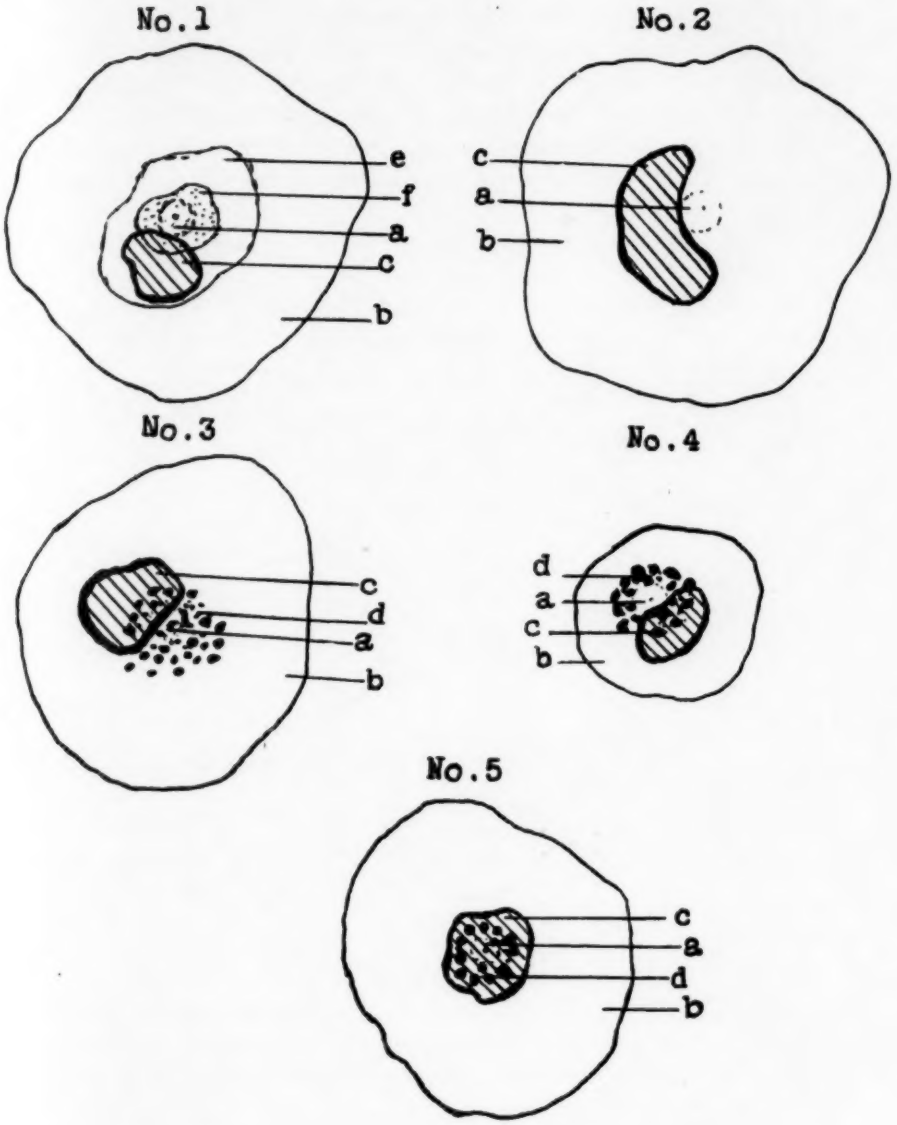

Fig. 5.—Papulovesicular dermatitis. No. 1 shows the reaction developing on the normal skin on the forearm, also showing the wheal following the injection of serum; No. 2, the complete reaction on the normal skin site; No. 3, the reaction within a group of papules on the arm; No. 4, the reaction within a group of annular papules on the forearm, and No. 5, the reaction within a group of annular papules on the forearm. *a* represents the site of injection; *b*, the erythema; *c*, the wheal; *d*, the papular lesion; *e*, everything of the reaction resulting from the sensitizing injection, and *f*, the wheal resulting from the sensitizing injection.

except in the patient with chronic urticaria with lichenoid dermatitis, who will be discussed presently. With the exception of those on the lupus lesions, all the wheals were definite and distinct though smaller than the controls on the normal skins and slower in development. The erythemas of the reactions were not easily differentiated on all of the abnormal sites.

The patients with psoriasis showed good reactions (fig. 7), though slow in formation. In one of the patients with lichen planus and in one

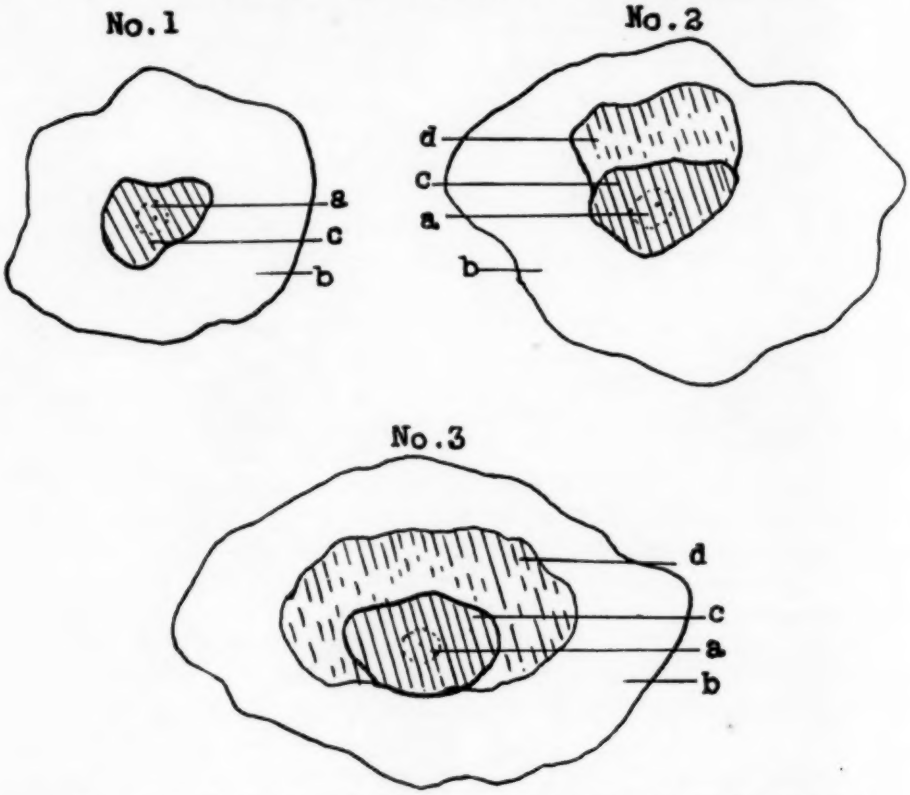

Fig. 6.—Pemphigus vulgaris. Nos. 1, 2 and 3 show the reaction on a past site of the pemphigus, twenty, twenty-four and forty-three minutes. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the edema around the wheal.

with lichen planus disseminatus no control reactions were possible owing to the general involvement of the skin.

The patient with granuloma annulare on the dorsum of the hands gave fairly good reactions on the granuloma lesion and at the site of a past lesion (fig. 8). The control reaction on the forearm, for reasons stated previously, showed the largest and most active wheal.

In the patient with lupus vulgaris, the reactions on the diseased sites and the control on normal skin began about the same time. The pruritus

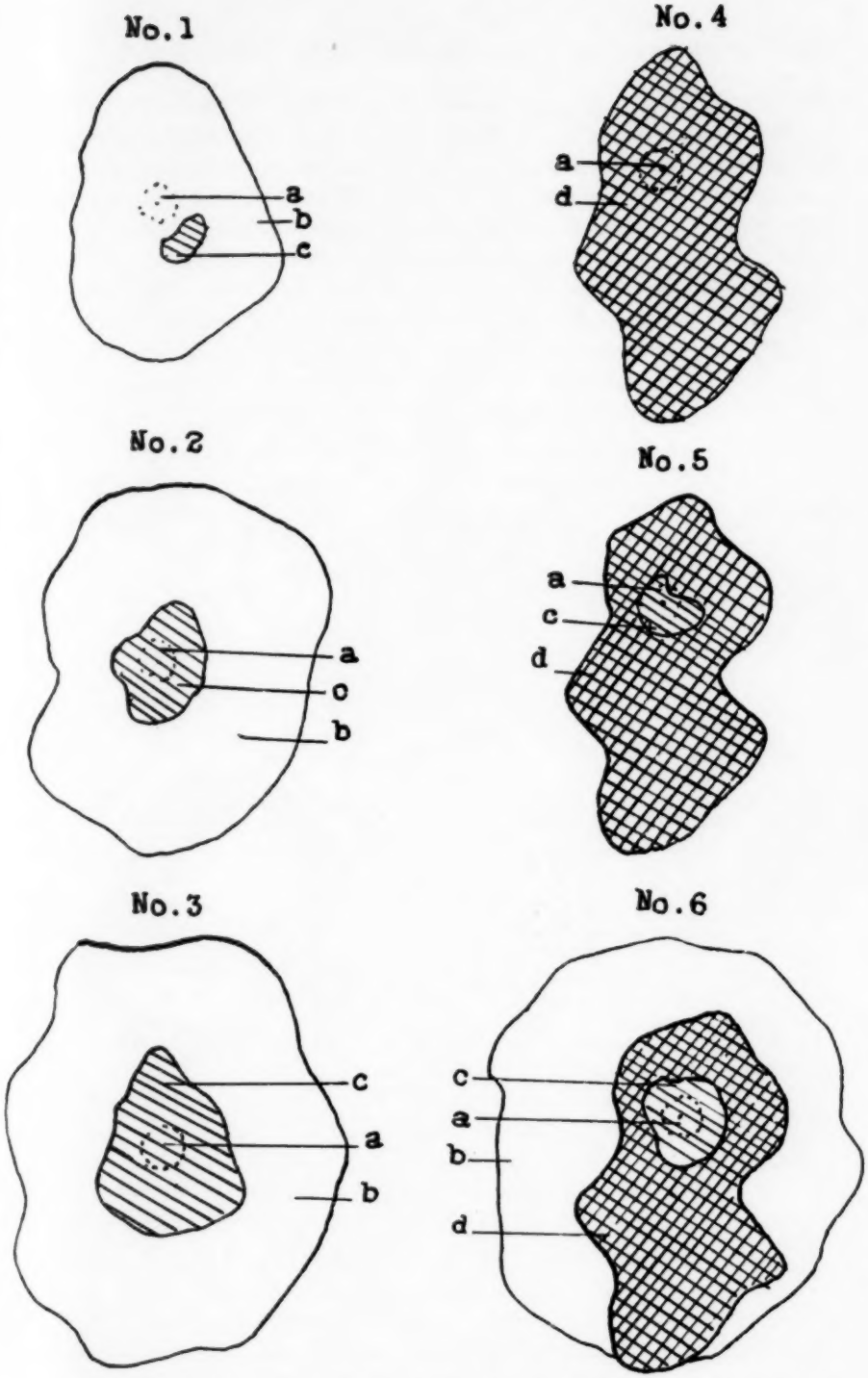

Fig. 7.—Psoriasis. Nos. 1, 2 and 3 show the reaction on the normal skin of the forearm, after 100, 105 and 122 minutes; No. 4, psoriatic patch, with the site of injection on the forearm, and Nos. 5 and 6, the reaction on the psoriatic patch, after 113 and 126 minutes. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the psoriatic patch.

over the abnormal site was marked and was later followed by a diffuse increase in the intensity of the redness localized to the area of the sensitized site, which was easily distinguished at the height of the reaction from the surrounding erythema of the lupus lesion. A pale pink spot appeared within the center of this deeply congested area. This

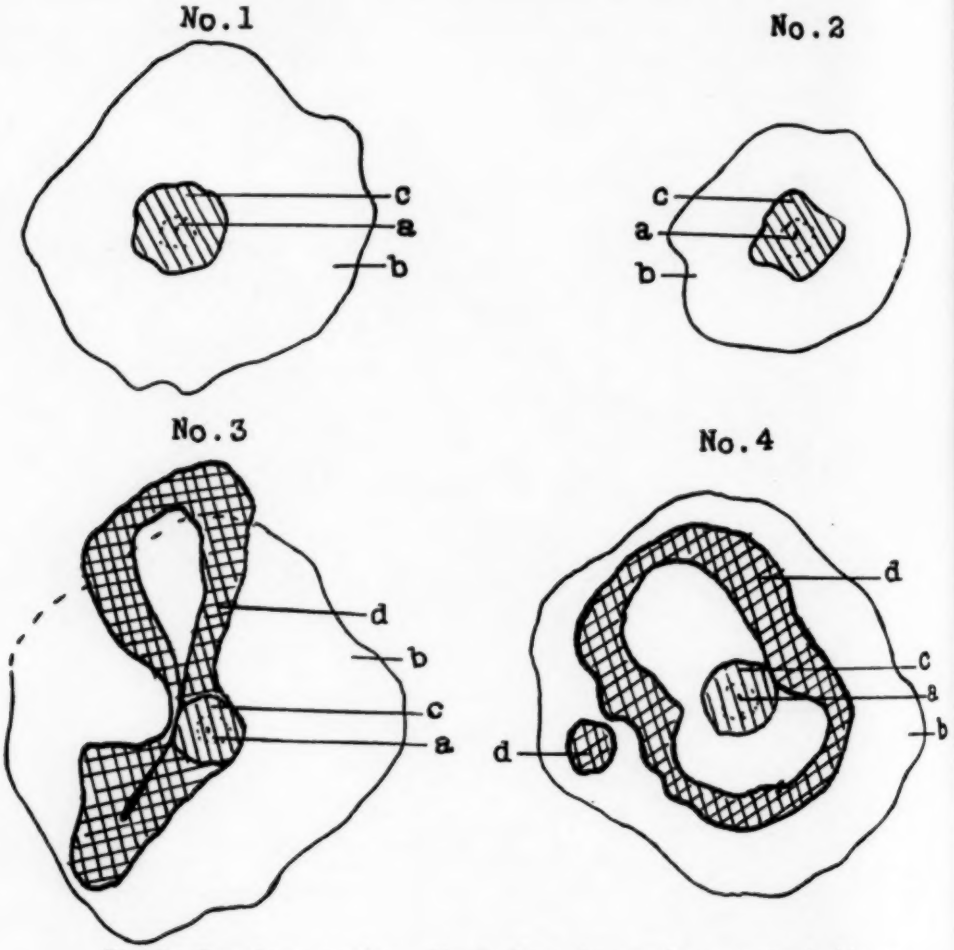

Fig. 8.—Granuloma annulare. No. 1 shows the reaction on normal skin on the forearm; No. 2, the reaction on normal skin on the back of the hand; No. 3, the reaction on the lesion on the back of the hand, and No. 4, the reaction within a lesion on the back of the hand. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the lesion of granuloma annulare.

apparently corresponded to the location of the wheal formation, but no elevation was perceptible to the touch.

In the patch of lupus verrucosus, sensitization was made close to the border of the lesion. The reaction began somewhat earlier than the con-

trol but was slower in forming. As will be noted by the tracing (fig. 9), a definite erythema with surrounding erythematous puncta developed on the outside of the patch, partially surrounding the sensitized area. The pruritus was marked, and as in the other case of lupus the wheal was not palpable. Here also the color of the sensitized site changed first to a deep red, soon to be followed by a paling in the center, which indicated the location of the wheal, though none was revealed to the touch.

The Noninflammatory Dermatoses.—In the dermatologic conditions characterized by new tissue infiltration in the subcutis, as scleroderma, and in those due to new connective tissue formation, as scars and keloid, and in the congenitally defective skin, as ichthyosis, the reactions were all positive.

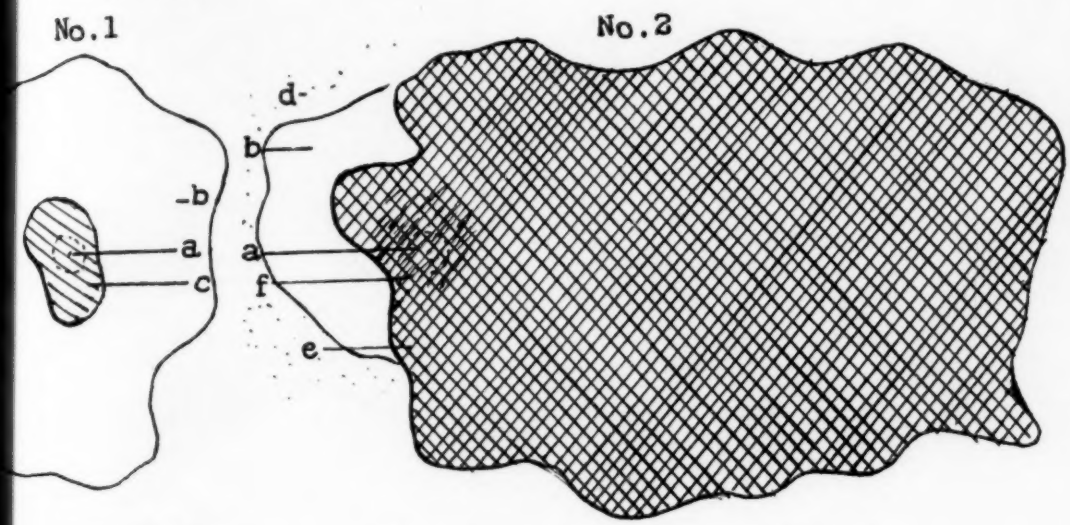

Fig. 9.—Lupus verrocosus. No. 1 shows the reaction on normal skin on the buttocks, and No. 2, the reaction on the patch of lupus verrucosus. *a* represents the site of injection; *b*, the erythema; *c*, the wheal; *d*, the punctate erythema; *e*, the lupus verrucosus, and *f*, the deep erythema.

The patch of scleroderma showed an exceptionally good reaction (fig. 10) in practically the same time of onset and development as the normal control, though the wheal was somewhat smaller.

One of the reactions on a scar was different from any previously observed. The scar, the result of a shrapnel wound, was on the back of the chest in the scapula area, and extended from the spine to the posterior axillary line. It was depressed and soft, and showed many telangiectatic vessels shining through. When fully formed, the reaction on this lesion showed a wheal almost as pronounced as the one on normal skin. It was, however, slower in onset and formation. The erythema began as the nuclear type (type 1), and instead of progressing to a uniform redness

developed groups of erythematous puncta surrounding the wheal (fig. 11), the intervening areas showing only suggestively faint erythematous changes.

The patients with keloid gave a good reaction, as the tracing shows (fig. 12). Though beginning almost at the same time as the one on the normal site, it was much slower in development, reaching its completion in almost twice the time of its control.

The patient with ichthyosis showed a good reaction. Because of the general involvement of the skin no normal skin control was possible.

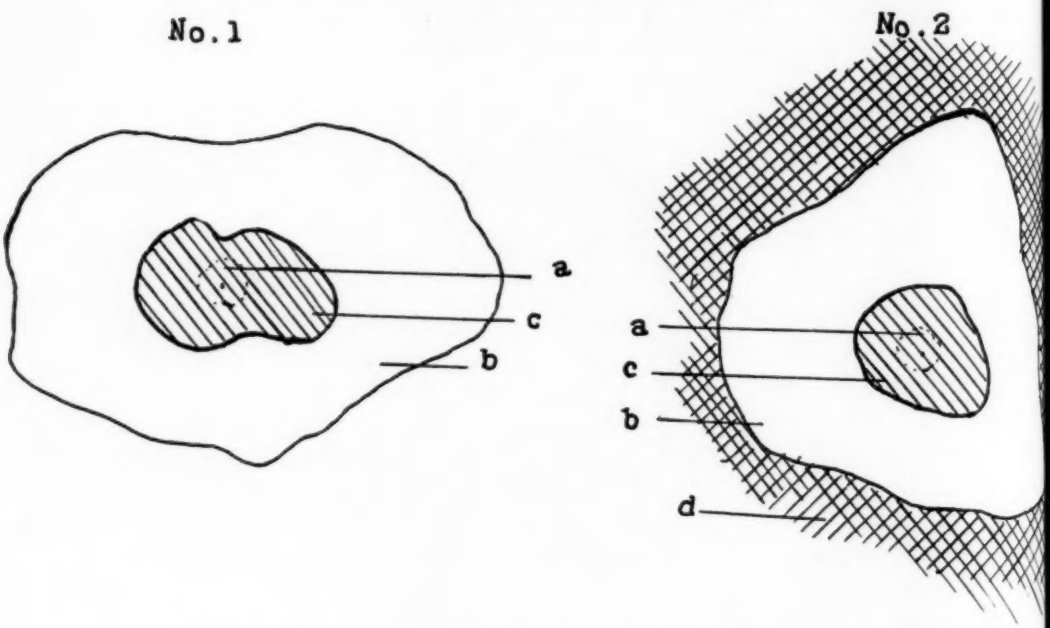

Fig. 10.—Scleroderma. No. 1 shows the reaction on normal skin on the chest, and No. 2, the reaction on a patch of scleroderma. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the patch of scleroderma

Skin Atrophy.—Three patients with acrodermatitis atrophicans were tested. One of these did not react positively. In the two positive cases the reactions were definite, though somewhat smaller than the wheals on the normal skin sites, and much slower in onset and formation. In one patient in whom a deep subcutaneous injection was also made, the wheal reaction at this site, while larger than the one at the site sensitized intracutaneously, was still smaller than the control (fig. 13); it was more rapid in formation than either of the other wheals.

The patient with Raynaud's disease had an advanced case, with healed as well as active gangrenous lesions on the fingers. Sensitization was performed on the forearms, which showed no apparent signs of the disease. This case was selected to determine whether the capillaries of

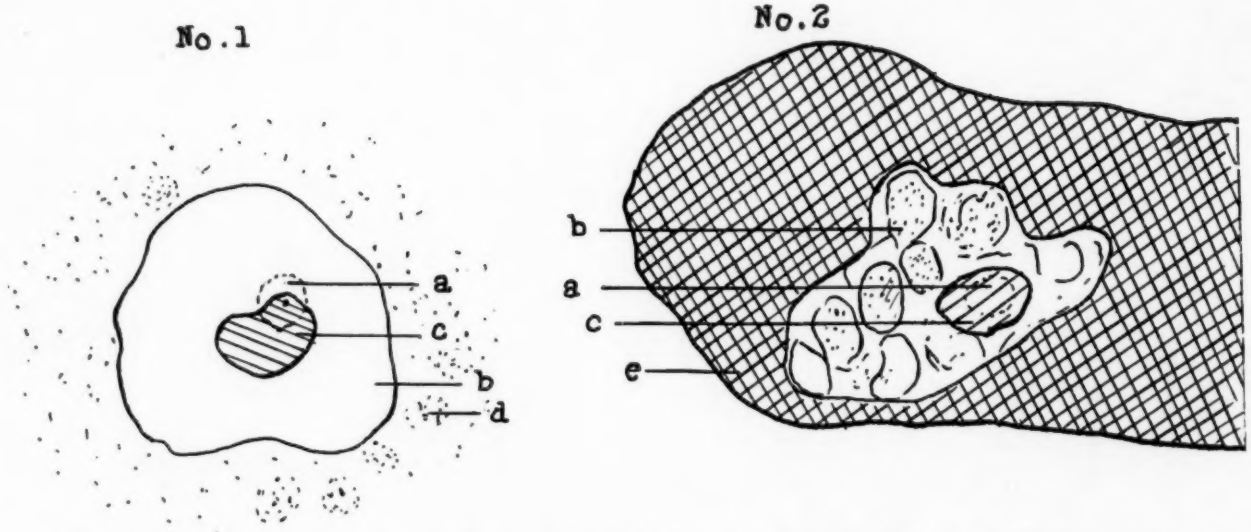

Fig. 11.—Scar. No. 1 shows the reaction on normal skin on the chest, and No. 2, the reaction on the scar. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the scar.

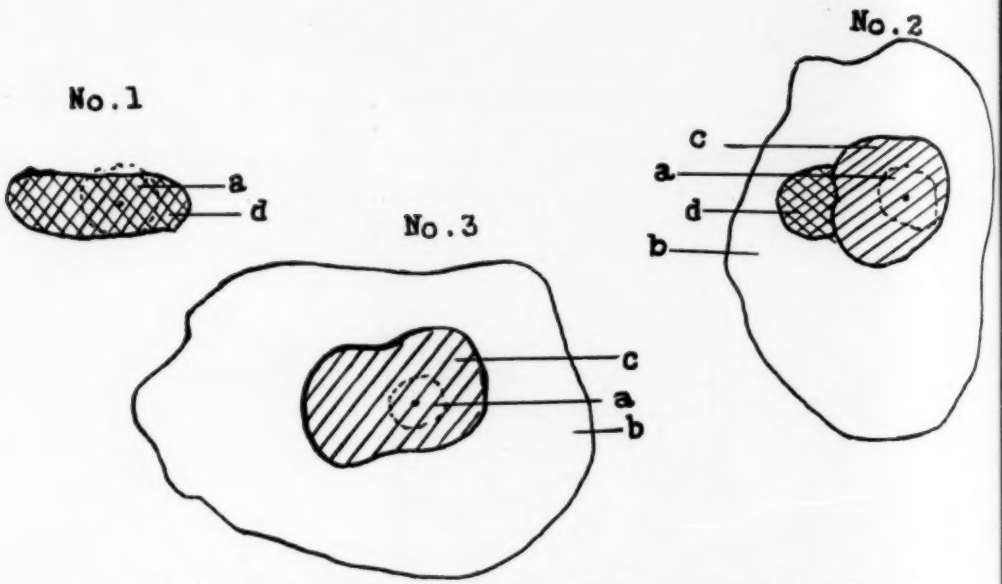

Fig. 12.—Keloid. No. 1 shows the keloid with the sensitized site; No. 2, the reaction on the keloid, and No. 3, the reaction on normal skin on the shoulder. *a* represents the site of injection; *b*, the erythema; *c*, the wheal, and *d*, the keloid.

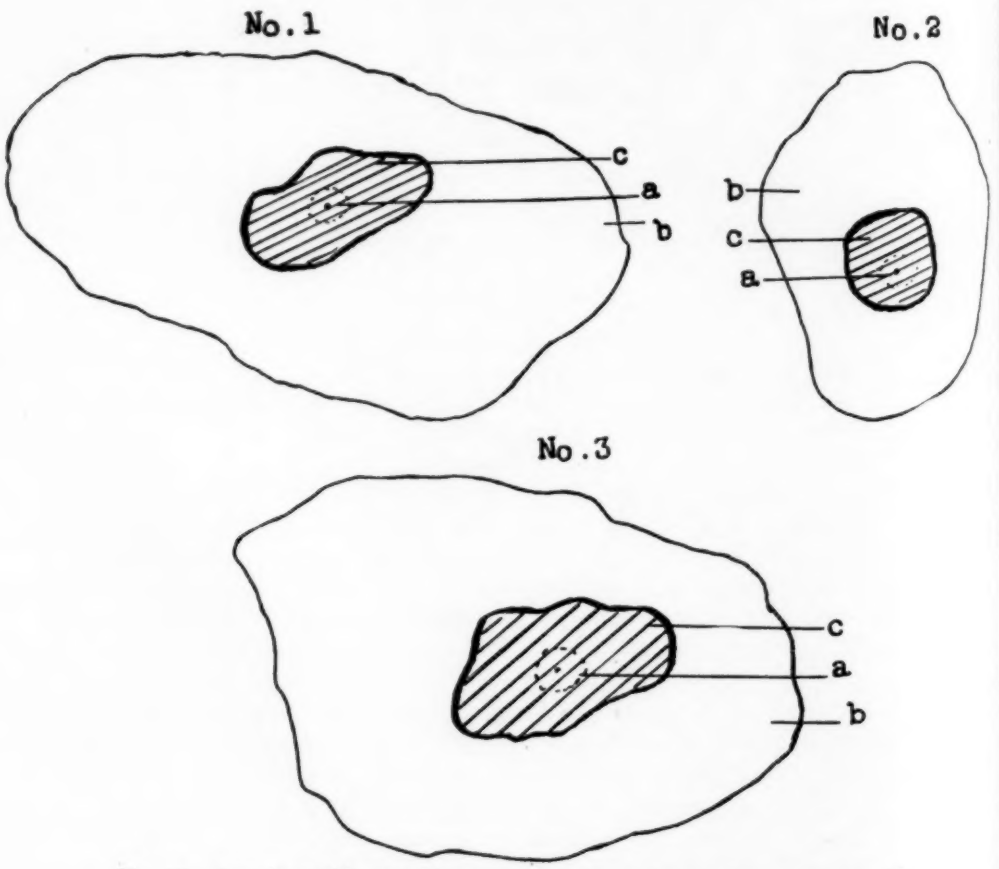

Fig. 13.—Acrodermatitis atrophicans. No. 1 shows the reaction on an atrophic area on the thigh (subcutaneous injection); No. 2, the reaction on an atrophic area on the thigh (intracutaneous injection), and No. 3, the reaction on normal skin on the arm. *a* represents the site of injection; *b*, the erythema, and *c*, the wheal.

the forearms would manifest any changes in their permeability as demonstrated by wheal formation. The resulting wheal was as good as those obtained on any normal skin sites.

THE NEGATIVE REACTIONS

As previously stated, there were three patients who gave negative reactions, a patient with acute urticaria, one with acrodermatitis atrophicans, and one with chronic urticaria with lichenoid dermatitis. The latter patient was the only one in a series of cases of severe urticaria and dermographism who possessed a dermographism-inducing principle in his serum which could be transferred to skin sites on normal persons. He was the subject of a paper previously reported.[13]

These patients who gave negative reactions not only failed to demonstrate reactions at the abnormal locations, but also did not show any wheals at the normal sites of the skin used as controls. It was apparently not the disease that prevented formation of the reaction, since in two patients with similar types of skin manifestations the reactions were elicited on both normal and abnormal sites.

When the reactions obtained on these abnormal dermatologic conditions are summarized, it will be noted that with few exceptions they were slower in onset and formation. Practically all showed pruritus to a variable degree. The type of the erythema, whether of the nuclear or the diffuse type, could not be determined in every patient, because of the red color of many of the diseased sites. With only one exception, the wheals were of the central type (type 1). Type 2 wheal, or the eccentric form, occurred only in the patient with the papulovesicular dermatitis, and then only on three of the four sensitized sites, one normal and two diseased. While no wheals could be definitely distinguished in the patients with lupus, the localized pruritus, the definite change in the color at the sites of sensitization and the surrounding erythema on the normal adjacent skin in one of the cases unquestionably signified a positive though modified reaction.

COMMENT

The fact that the wheals produced by us in abnormal dermatologic conditions were constitutional in origin distinguished these from all those previously reported by other workers. Deductions based on the comparison of our results with those of the previous writers would therefore not be altogether justified.

It will be noted that a definite wheal reaction was obtained on abnormal skin sites of every patient who gave a similar reaction on a normal skin site. In other words, cells of abnormal or diseased lesions of the skin, at least of the types here experimented with, will fix and apparently

13. Walzer, A.: Urticaria: III. Experimental Urticaria Factitia, Arch. Dermat. & Syph. **18**:868 (Dec.) 1928.

retain reagins without any considerable intervention in their potency. Reagins, therefore, do not demand normal cells for their activity. Nevertheless, many reactions developing on such abnormal cells may start and mature much slower and may develop smaller wheals than their corresponding controls on normal cells.

In comparing the reactions obtained in the diseases classified under the acute exudative dermatoses with their controls on normal skin sites, it will be noted that the patients with phenolphthalein eruption, multiform erythema, annular infiltrated erythema and pemphigus all gave as good reactions on the abnormal as on the normal sites. Three of the patients of this group, those with annular urticaria, angioneurotic edema and papulovesicular dermatitis, gave reactions which were smaller in size and slower in onset and formation.

These definite changes in the wheals of the latter three types of cases cannot be explained on the basis of the quantity of the reagins deposited, as the same amount of the sensitizing serum was injected into each of the sites. It might be argued that, due to the local pathologic changes of the tissues, some of the deposited reagins had been destroyed in situ or that not enough of the antigen (the offending substance in the ingested food) could reach the site of sensitization on the abnormal lesion. Since these factors did not seem to apply to other members of this group of patients, whose lesions apparently present almost identical microscopic pictures, these suggestions do not seem plausible though they cannot be totally excluded as possibilities.

If one accepts the hypothesis of Lewis [6] that a partial refractoriness of the vessels of these sites had developed in these cases, as a result of the existing or the preexisting inflammatory reaction, thus preventing the complete wheal formation, it would be difficult to explain why this did not occur in all the patients of this group.

During the course of our studies we have observed a number of instances in which repetition of a stimulation to past wheal sites was followed by a partial or a complete refusal of that site to wheal. This would seem to confirm the observations of Lewis in that a state of refractoriness does occur at some of these skin sites in the course of such reaction. This phenomenon, however, occurred irregularly or under no definite rule, and under conditions the exact nature of which is not completely understood at present.

On the other hand, considering the reactions in all the other groups of patients here experimented with, it will be seen that they were, as a whole, smaller in size and slower in onset and formation than their corresponding controls. In other words, there is no question that there were some factors at work which interfered with the full development of the wheal. To ascribe these resulting diminished reactions altogether to a refractoriness, as implied by Lewis, is hardly warranted in the light

of the marked and often permanent local pathologic changes of the abnormal sites, which cannot be ignored. These abnormal anatomic conditions undoubtedly must take some part in hindering and preventing the complete action of all factors concerned in the induction of wheals. This is especially emphasized in the cases of lupus, in which the antigen-reagin reaction undoubtedly occurred, as was evidenced by pruritus, erythema and the paling. No wheal was actually demonstrated due, in all probability, to the productive and destructive processes concerned in the tubercular structure, which it is reasonable to assume must have taken a considerable part in the prevention of the development of a wheal.

As stated previously, the association of urticaria with the diseases of the skin here experimented with (excepting some of those included under the acute exudative diseases), is not commonly observed clinically. As a matter of fact, wheals on such lesions as psoriasis, scleroderma, scars, and so forth, are rarely seen. That it is possible for modified or complete wheals to develop on these types of lesions has been shown by our experiments. Refractoriness or pathologic changes of the tissue might account for a partial or incomplete whealing, but certainly these factors fail to explain adequately the extremely infrequent association of these diseases with urticaria, especially in patients in whom whealing is possible.

In regard to the negative cases, three patients did not respond with wheals at any of the normal or abnormal sites of sensitization. The refusal of these cases to wheal might be explained purely on a local immunologic phenomenon—the inability of the skin of that person to accept local passive transfer of sensitivity; that is, certain normal as well as diseased skins will not fix and hold the deposited reagins. On the other hand, the refusal of these sites to wheal might be dependent not on a local skin condition but on a constitutional variation of the person in that he does not demonstrate any circulating antigen in the blood stream, due to an inability to absorb undigested proteins in an unaltered state. This phase of the question has been discussed in previous communications.[14]

SUMMARY

1. All previous studies on experimental wheals on abnormal dermatologic conditions by other workers were limited to the production of wheals of external origin by the local application of various drugs, chemicals and so forth.

2. By the method of local passive sensitization on abnormal skin sites of patients with various dermatologic diseases, and then by feeding the offending food, wheals were induced in every instance on every

14. Walzer and others (footnotes 1 and 2).

pathologic lesion in which a reaction had also been produced on the normal skin sites used as controls.

3. Reagins do not demand a normal cell for their fixation and activity.

4. In a great majority of the abnormal skin sites tested, the wheal reactions were smaller and slower in onset and formation than the controls on normal skin sites..

5. While a state of partial refractoriness might possibly explain the diminished and slowed reactions in the acutely inflamed dermatoses, it probably plays a much smaller rôle in the other types of dermatologic conditions experimented with. In these cases the local pathologic changes are in all probability responsible for the change in wheal reaction.

217 Clinton Avenue.

DERMATITIS EXFOLIATIVA DUE TO ARSENIC IN WALL PAPER *

CHRIS HALLORAN, M.D.
LOS ANGELES

Arsenic as a cause of exfoliative dermatitis was recognized soon after the advent of arsenical preparations in the treatment for syphilis. It is the opinion of Throne, Van Dyck, Marples and Myers [1] that arsenic is either a contributing or an exciting cause in at least 30 per cent of all cases diagnosed as eczema.

The sources of arsenic in exfoliative dermatitis due to arsenic poisoning are: medication, food contamination, absorption through the skin of susceptible persons and contact with the drug either in surroundings or through occupation. The industrial preparations containing arsenic are: arsenic trioxide (as 206), often called arsenous acid or white arsenic, which forms the basis of most of the industrial preparations; liquid or solid weed killers, wood preservers, sprays containing arsenic and arsenical sheep dips in solid or liquid preparations; fly paper, fly-killing solution (arsenic trioxide), arsenical powders, pastes and various liquids for destroying insects and animals; arsenical rat pastes and powders, liquid arsenical ant destroyers, arsenical soaps and sprays for trees; paris green and Schweinfurt green (preparations of arsenic and copper), which are frequently used in sprays for fruit trees. London purple and paris purple are mixtures of lime water with colored arsenical residues obtained in dye works. Sheeles green, used as a spray for fruit trees, is a preparation of copper arsenite. Artificial flowers and wall paper are frequently colored by arsenical pigments such as Sheeles green, paris green and sulphides of arsenic. Arsenic trisulphide was formerly used as a depilatory. Arsenic trioxide and other arsenical compounds are used in many manufacturing processes.

There is a variance of opinion concerning the manner in which exfoliative dermatitis is caused by arsenic. Unna [2] considered that the disease is not an entity but is the result of damage to the vegetative or the autonomic nervous system, and he reported three cases which improved following medication with suprarenal extract. Kranston Lowe considered it a reaction due to toxins of micro-organisms. It is the belief of some that in the treatment for syphilis, mercury causes an

* Submitted for publication, June 7, 1929.

1. Throne, Van Dyck, Marples and Myers: New York State J. Med. **27**:757 (July 15) 1927.

2. Unna, Paul, Jr.: Heilung von fünf Fällen von exfoliativen Erthrodermien, Dermat. Wchnschr. **87**:1265, 1928.

arsenical retention by injury to the kidneys, which sometimes results in exfoliative dermatitis. Fordyce, Rosen and Myers [3] noted that in patients who were using mercurial rubs and at the same time taking arsenic intravenously, there was a greater susceptibility to the effect of arsenic on the skin, the mercury externally seeming to reduce the resistance of the skin to arsenicals in a way analogous to that in which sulphur in scabies frequently lowers the resistance of the skin. It is also their opinion that when normal elimination of arsenic through the skin is interfered with its deposition in the subcutaneous layers is sufficient to produce irritation and consequent edema which prevents the functioning of the epidermis and results in an exfoliative dermatitis.

In arsenical poisoning it would seem that arsenic is deposited in every tissue of the body. J. A. Latham [4] reported that at autopsy in a case of exfoliative dermatitis due to arsenic the drug was found in every tissue examined—the liver, the brain, the skin and the pericardial fluid, as well as in an adherent mucous covering of the mucosa of the stomach and intestines.

Fordyce, Rosen and Myers [3] reported positive observations of arsenic in twenty-one of twenty-two specimens of scales from cases of exfoliative dermatitis following the administration of arsphenamine, in amounts varying from 0.123 to 315.9 mg.

Arsenic is usually found in the urine of patients suffering from exfoliative dermatitis due to arsenic poisoning, but is of little diagnostic value, since it may be present in pathologic amounts in patients suffering from many other skin diseases or in the urine of apparently normal persons. Hills [5] found positive tests for arsenic in the urine of 180 persons taken at random. Throne, Van Dyck, Marples and Myers [1] found arsenic in the urine of patients suffering from eczema, scleroderma, leukoderma, psoriasis, Majocchi's disease, pemphigus and motor ocular paralysis as well as in many normal persons.

REPORT OF CASE

When first seen in October, 1927, Mrs. B. was suffering from an exfoliative dermatitis involving the entire body. There was much weeping, especially in the flexures of the elbows and knees and about the axillae and sides of the neck. There was marked generalized erythema and desquamation of fine and coarse scales. The palm of the left hand presented two circumscribed, pea-sized keratoses. On the palm of the right hand, a similar lesion was present at the base of the little finger. The scalp also presented marked exfoliation of coarse scales. The history revealed that the condition had begun one year previously in the webs of the fingers as erythema and scaling, followed a few months later by similar

3. Fordyce, J. A.; Rosen, J., and Myers, C. N.: Quantitative Studies in Syphilis from a Clinical and Biological Point of View, Am. J. Syph. **7**:211 (April) 1923.

4. Latham, J. A.: Exfoliativa Dermatitis Due to Arsphenamin, J. A. M. A. **73**:14 (July 5) 1919.

5. Hills: Boston M. & S. J. **131**:453, 1894.

lesions in the flexures of the elbows and knees, on the sides of the neck and about the axillae. The patient had been told that the condition was eczema. With other medication, she had been given Asiatic pills by mouth, following which the condition had rapidly become worse and had remained generalized for the past year.

Examination of the urine for arsenic was reported positive by one laboratory and negative by another. Examination for arsenic in exfoliated scales collected from the patient gave positive results. Under medication for exfoliative dermatitis from arsenic poisoning the patient responded slowly, but after a few months she was sufficiently improved to go to the mountains for a rest. While away, the condition improved markedly, and the patient returned entirely well. A few weeks following her return home, however, the condition recurred. On questioning it was learned that a day previous to the recurrence she had papered the walls of some rooms in the court where she lived. Examination of the wall paper of the patient's room and of that with which she had papered the adjoining court gave positive reactions for arsenic. These papers were a variation in colors of green, blue and pink. A new paper that gave a negative reaction for arsenic was selected, and the patient's home was entirely papered with the same. Since that time she has remained well.

COMMENT

When a case of generalized dermatitis exfoliativa is first seen, arsenic as a possible source of infection readily comes to the mind. It is the early manifestations of the skin that are most frequently not recognized.

If the possibility of susceptibility to arsenic is kept in mind in patients with early cases who present patchy, reddish or pinkish, more or less symmetrically distributed, scaling lesions on the hands and exposed surfaces, and the history and surroundings of the patient are thoroughly investigated, much worry and trouble may frequently be avoided, and a great deal of grief and discomfort saved the patient.

SUMMARY

A case of exfoliative dermatitis due to arsenic absorbed from wall paper is reported. A review of the literature reveals that after many years of controversy concerning the terms pityriasis rubra and dermatitis exfoliativa, the two titles are accepted as synonymous. There seems to be no clearcut segregation of cases into those of primary and those of secondary origin.

The many sources of arsenic in exfoliative dermatitis due to the drug are reviewed.

Though arsenic may be present in every tissue in the body in arsenic poisoning, perhaps the most valuable laboratory test in dermatitis exfoliativa due to the drug is a positive reaction for arsenic in scales scraped from the body of the patient. Arsenic in the urine is of little or no value as an aid in diagnosis, since it may be found in the urine of those suffering from many other skin diseases, as well as in many apparently normal persons.

1052 West Sixth Street

DIPLEGIA FACIALIS IN EARLY SYPHILIS

REPORT OF A CASE *

MAURICE J. STRAUSS, .M.D.
Associate Attending in Dermatology and Syphilology at the New York Post-Graduate Hospital
NEW HAVEN, CONN.

While reports of many cases of paralysis of both seventh cranial nerves are finding their way into the literature at present, this condition is almost exclusively due to a multiple neuritis or to trauma. Paralysis of one or more of the cranial nerves is not uncommon in early or late syphilis, but the early involvement of both facial nerves is rare enough to warrant the reporting of an additional case.

A careful search of the available literature discloses a total of thirty-seven cases of diplegia facialis in syphilis. Twenty-three of these cases may be said to be in association with early cases of syphilis, six with undoubtedly late cases and the remaining eight with cases of syphilis in which it is impossible to ascertain the stage of the disease.

Jonathan Hutchinson [1] stated that "A remarkable point in reference to the influence of syphilis on the cranial nerves is the almost constant exemption of the facial nerve. Facial paralysis from rheumatism (Bell's paralysis) is tolerably common, but Bell's paralysis from syphilis is infinitely rare." In discussing a case of early involvement of the facial nerve, he said: [2] ". . . nor have I ever seen a case in the early stage in which it was double."

Previously it was believed by many writers that diplegia facialis was due almost entirely to syphilis. Montgomery and Culver [3] stated that: "When there is bilateral paralysis accompanied by paroxysmal nocturnal pains it is almost certainly caused by it." Guieu and Pons [4] affirmed that syphilis is the most common cause of diplegia facialis, and also that it usually appears at the end of the primary and at the beginning of the secondary stages, and De Castro [5] said that 95 per cent of the

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* Submitted for publication, April 11, 1929.

1. Hutchinson, Jonathan: Syphilis, New Edition, New York, Funk & Wagnalls Company, 1909, p. 277.

2. Hutchinson, Jonathan: Deafness and Facial Paralysis in the Secondary Stage of Syphilis, Arch. Surg. (Hutchinson) **7**:169, 1896.

3. Montgomery, D. W., and Culver, G. D.: Paralysis of the Seventh Cranial Nerve in Early Constitutional Syphilis, Am. J. Syph. **7**:663, 1923.

4. Guieu and Pons: Diplégies faciales, Gaz. d. hôp. **97**:369, 1924.

5. De Castro, Aloyso: Evolution et aspects cliniques de la diplégie faciale, Rev. neurol. **26**:801, 1919.

cases of bilateral paralysis are due to syphilis, but Gibson,[6] in quoting him, said that this figure is not generally accepted.

A review of the literature on facial paralysis, however, seems to place syphilis as a rare cause in both unilateral and bilateral cases, and the writers on syphilis do not consider involvement of the seventh nerve as a common complication of that disease. Hudelo and Barbé [7] said that facial diplegias in secondary syphilis are infinitely rarer than monoplegias. Stokes [8] stated that palsy of the seventh nerve is present in 1 per cent of the cases of early syphilis, and, in 1867, Lefeurre,[9] in reporting a case in which the condition was unilateral occurring three and one-half months after the chancre, reviewed the literature up to that time and found only nine cases. He found no diplegias. Noica and Aramă [10] reviewed 150 cases of facial paralysis finding only three in which syphilis was the cause. Eckel [11] in an article on early manifestations of cerebrospinal syphilis does not mention facial paralysis. On the other hand, Turner [12] surveyed the literature on diplegia facialis and found sixty-nine cases, of which only one is cited as being due to syphilis. He added to this list two cases occurring late in the disease, in which both of the patients had a definite history of syphilis and gave positive serologic symptoms. Bradford, Bashford and Wilson [13] found seventeen cases of facial palsy in twenty cases of infectious polyneuritis, fourteen of which were bilateral. These statistics collected by modern writers seem to disprove effectively the statements of the older writers already mentioned.

Aside from mentioning it as a possible cause, the various modern textbooks on neurology devote practically no space to the connection between syphilis and facial diplegia.

The appended table includes every case which can be considered as due to syphilis which I was able to find in the available literature.

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6. Gibson, Alexander: Facial Paralysis, Surg. Gynec. Obst. **33**:472, 1921.

7. Hudelo and Barbé: Diplégie faciale survenue au cours du traitement arsénobénzique six semaines après l'apparition du chancre, Bull. Soc. franç. de dermat. et syph., November, 1927, no. 8, p. 726.

8. Stokes, John H.: Modern Clinical Syphilology, ed. 1, Philadelphia, W. B. Saunders Company, 1926, p. 511.

9. Lefeurre: Hemiplegie faciale syphilitique au début des accidents secondaires de la syphilis, Bull. gén. de thérap. **70**:266, 1867.

10. Noica, D., and Aramă, O.: Periphere syphilitische Facialis-Lähmungen, Rev. san. mil., Bucuresci **25**:171, 1926; Zentralbl. f. Haut und Geschlechtkrankh. **22**:415, 1927.

11. Eckel, John L.: Early Neurological Manifestations of Syphilis, New York State J. Med. **25**:63, 1925.

12. Turner, C. C.: Bilateral Facial Paralysis, Memphis M. J. **1**:34, 1924.

13. Bradford, J. R.; Bashford, and Wilson: Acute Infective Polyneuritis, Quart. J. Med. **12**:88, 1918.

Summary of Cases Reported in the Literature

Reported by	Stage of Disease	Previous Treatment	Signs of Intolerance	Treatment Continued by Means of	Result	Miscellaneous Notes
Sir Charles Bell,[24] 1844	Secondary 2 months after chancre	None	.....	Mercury	Recovery	Quoted without reference; ascribed by Davaine to Dupuytren
Roberts: Brit. M. J., 1862, p. 355	Six months after initial lesion	Mild mercury and iodides	None	Not stated	Not stated	
Roberts: Brit. M. J., 1862, p. 355	Questionable	Mild mercury and iodides	None	Not stated	Not stated	
Wachsmuth: Thesis de Dorpal, 1864	Three months after appearance of secondaries	Not stated	.....	Mercury	Death	
Buzzard: Tr. Clin. Soc. London, **7**: 75, 1874	Tertiary 14 years after infection	None	.....	Potassium iodide and mercury	Recovery	Deafness
Brieger, L.: Charité-Ann. **12**: 150, 1887	Two months after appearance of secondaries	None	.....	Iodides and mercury	Improved	Deafness and headache
Moniskow: Rev. neurol. **2**: 119, 1894	Secondary, 2 months after initial lesion	None	.....	Iodides and mercury	Improved	
Commandeur: Province méd. **7**: 222, 1893	Primary and secondary	Not stated	.....	Not stated	Improved	
Hutchinson: Arch. Surg. **6**: 268, 1895	Tertiary	Not stated	.....	Not stated	Not stated	Deafness
Quincke,[20] 1903	Seven months after initial lesion	Iodides and mild mercurous chloride	None	Mercury	Recovery	
Raymond: Rev. gén. de clin. et de thérap. **18**: 497, 1904	Secondary	None	.....	Biniodide of mercury	Improved	
Lannoix and Dujol,[21] 1912	Four months after initial lesion	Mercury (insufficient)	None	Mercury and iodides	Not stated	
Bonnet,[22] 1912	Five and a half months after initial lesion	Mercury (insufficient)	None	Mercury	Improved	
Juan de Azua, [19] 1912	Six weeks after initial lesion	Arsenic	Present	Arsenic and mercury	Improved	Auditory; oculomotor and taste disturbances
Krumbhaar: J. Nerv. & Ment. Dis. **39**: 472, 1912	Three months after initial lesion	Local only	.....	Mercury and iodides	Improved	
Cadwalader: J. Nerv. & Ment. Dis. **39**: 398, 1912	Not stated	Not stated	.....	Not stated	Improved	
H. Ewing,[23] 1914	Four months after initial lesion	None	.....	Arsenic and mercury	Improved	
Spiller [25]	One month after initial lesion	None	.....	Not stated	Not stated	Quoted by H. Ewing without reference

Summary of Cases Reported in the Literature—Continued

Reported by	Stage of Disease	Previous Treatment	Signs of Intolerance	Treatment Continued by Means of	Result	Miscellaneous Notes
Mundle: Canad. M. A. J. **6**: 429, 1916	Tertiary	Not stated	.....	Potassium iodide	Improved	
Leopold: J. Nerv. & Ment. Dis. **45**: 439, 1917	One year after primary, 2½ months after secondaries	Not stated	.....	Not stated	Not stated	
Karplus: Wien. klin. Wchnschr. **30**: 1535, 1917	Two months after initial lesion	Local only	.....	Mercury salicylate	Syphilis improved; paralysis unchanged	
Karplus: Wien. klin. Wchnschr. **30**: 1535, 1917	Tertiary, 15 years after primary	Not stated	.....	Mercury and arsenic	No improvement	Patient had tabes dorsalis
De Castro: Ann. d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Recent	Not stated	.....	Not stated	Cure in 3 months	
De Castro: Ann. d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Not stated	Arsphenamine	Not stated	Not stated	Not stated	Reported as occurring in 1913, when numerous cases appeared; probably due to insufficient treatment
De Castro: Ann. d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Secondary	Not stated	.....	Not stated	Cure on left 3 months; improvement right 1 year	
De Castro: Ann d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Secondary	Not stated	.....	Not stated	Complete cure in 1 month	
De Castro: Ann. d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Secondary	Not stated	.....	Not stated	Improved	
De Castro: Ann. d. Fac. d. med. d. Rio de Jan. **1**: 464, 1917	Not stated	Not stated	.....	Not stated	Cure in 1 week	
Descomps and Querey: Rev. neurol. **26**: 49, 1919	Not stated	None	.....	Not stated	Death 6 months later	Spinal fluid showed many lymphocytes, increased albumin and a positive Wassermann test
Askgaard: Hospitalstid **63**: 558, 1920	Two months after primary	None	.....	Not stated	Improvement on one side	Wassermann test of the blood positive; spinal fluid showed 110 cells
Molin de Teyssieu and Guénolé: Gaz. hebd. d. sc. méd. de Bordeaux **44**: 82, 1923	Not stated	Not stated	.....	Iodides orally and biniodide of mercury intramuscularly	Improved	
Turner,[12] 1924	Tertiary	Not stated	.....	Not stated	Not stated	Wassermann test of the blood positive; spinal fluid negative
Turner,[12] 1924	Tertiary	Not stated	.....	Not stated	Not stated	Wassermann test of the blood negative; spinal fluid positive

Summary of Cases Reported in the Literature—Continued

Reported by	Stage of Disease	Previous Treatment	Signs of Intolerance	Treatment Continued by Means of	Result	Miscellaneous Notes
Hudelo and Barbé,[7] 1927	Secondary	Arsenic	Present	Mercury	Recovery	
Makhargi [7]	Not stated	None	.....	Not stated	Not stated	Quoted by Hudelo and Barbé without reference
Yamamato [7]	Not stated	Arsenic	.....	Not stated	Not stated	Quoted by Hudelo and Barbé without reference
Lortat-Jacob, Fernet and Poumeau-Delille,[26] 1927	Secondary	Arsenic	Present	Mercury	Recovery	

REPORT OF CASE

History.—A. S., a white man, aged 43, divorced and a native of the United States, was first seen on Dec. 8, 1926, with a complaint of pain in one side of the face. About two weeks previously he had pain and a feeling of stiffness in the right side of the face and could not close the eye on that side. He reported to the industrial surgeon of the company in which he worked and was referred to a physiotherapeutist who at his second visit observed a generalized eruption and took blood for a Wassermann test. This proved to be strongly positive, and the patient was referred for treatment. The patient admitted sexual exposure followed by a urethritis six weeks before. This was apparently cured in five weeks.

Examination.—On examination there was a complete right facial paralysis. The right side of the face was flat and expressionless, and the right labial commissure drooped. There were no wrinkles on the right half of the forehead, and the patient was unable to close the right eye. He could not show his teeth or whistle. The patient complained of a headache which was worse at night and said that the left side of his face felt stiff; there was, however, no paralysis on the left side. The pupils were equal and regular and reacted to light and accommodation. There was no nystagmus. The Romberg sign was absent, and there were no tremors or ataxia. The Babinski reflex was absent. The deep and superficial reflexes were normal. Over the back and chest and extending down the flanks there was a diffuse ham-colored maculopapular eruption. The pharynx was red, and the remaining mucous membranes were normal. The genitals showed no sign of a resolving initial lesion.

The patient was advised to go to a hospital, and on December 11 he was admitted. His nocturnal headache was worse, extending down the back of the neck. The left side of the face had also become immobile, and he now presented a total and bilateral facial paralysis. There was slight fanning of the great left toe in testing for a Babinski. The afternoon temperature was 101 F. The eyegrounds showed the following condition: "Possibly the nerves are paler than normal. Very slight amount of sclerosis." Lumbar puncture gave a clear fluid under normal pressure with 32 polymorphonuclears, 24 small mononuclears and 7 large mononuclears, a total of 63 cells. The globulin test was strongly positive. The colloidal gold curve was 0011221000. The Wassermann reaction (Kolmer modification) with 0.5 cc. of fluid was 4 plus; with 0.25 cc., 3 plus and with 0.125 cc., 1 plus. The Wassermann reaction of the blood was 4 plus in all dilutions (from 0.1 to 0.0025). The Kahn reaction was 4 plus.

On December 12, hearing was diminished in both ears, and the patient complained of buzzing. The right pupil was slightly irregular and smaller than the left. There was a weakly positive Babinski sign on the left. Bilateral spasticity

and pain were present in the Kernig test but were more marked on the left The facial paralysis was complete except for slight motion in the right orbicularis oculi.

On December 14, both pupils were dilated, the right irregularly with the adhesions above. The right iris was off color; the left was normal. There was some exudate on the right lens. The tension was normal. There was some pain.

Treatment and Course.—On December 15, the left epitrochlear was enlarged; the right was barely palpable. Treatment with neoarsphenamine was begun at this time.

On December 16, wrinkles reappeared on the forehead, and the patient could almost close his eyes. The Babinski sign was present on the left side. The Kernig sign was observed only just before full extension. The knee reflexes were equal and active.

On December 18, the patient was able to raise the left corner of the mouth. The wrinkles on the forehead were evident, and the eyes could be closed so that the scleras did not show.

On December 19, the patient could lift the upper lip, showing his teeth on the left side.

On December 24, the rash was entirely gone, only a slight pigmentation remaining. The left side of the face was almost entirely normal. The Kernig and Babinski signs were absent. Headache was no longer present. The right facial paralysis was decreasing.

Lumbar puncture showed 37 mononuclears. The globulin test was positive. The colloidal gold curve was 0122210000. The Wassermann reaction (Kolmer modification) was negative.

Summary.—Beginning the day of admission the patient received 1/6 grain (0.01 Gm.) of mercury succinimide intramuscularly daily for six days. This course was repeated after one day of rest, and this treatment was continued during his stay in the hospital.

On December 15, 0.3 Gm. of neoarsphenamine was administered; on December 27, 0.9 Gm.; on December 31, 0.9 Gm.; on January 4, 0.9 Gm.; on January 8, 0.75 Gm.; on January 10, 0.9 Gm. and on January 15, 0.9 Gm., a total of 7.95 Gm.

On January 5, the patient was able to travel, and as he was indigent and a native of the state of Maine, he was deported. Dr. A. W. Plummer, of Lisbon Falls, Maine, reported that he gave him fifteen injections of sulpharsphenamine and ten of X-iodo-bismuth.

In November, 1927, the patient was seen again for the first time since his discharge from the hospital. The Wassermann reaction of the blood was negative, and there was no sign of any weakness of the facial muscles.

REVIEW OF LITERATURE

Hudelo and Barbé,[7] in 1927, reported a case of diplegia facialis in an early case of syphilis which came on following the fourth injection of neoarsphenamine, a total of 1.35 Gm. having been given. On the theory that the facial paralysis was due to arsenic, these investigators discontinued the injection of neoarsphenamine but continued treatment with potassium iodide and cyanide of mercury with resulting alleviation of the symptoms. It is worthy of note that this patient showed other signs of an idiosyncrasy to arsenic. In discussing this case, Benario,

Milian, Ravaut, Sicard and Guttman agreed that while arsenic toxicity is a possible explanation, for involvement of the cranial nerve is occasionally seen in nonsyphilitic patients who are taking arsenic, nevertheless facial paralysis occurring in cases of syphilis is usually a syphilitic neuritis. Hudelo and Barbé advanced three possibilities as a cause of this condition: (*1*) syphilis, (*2*) mercury and (*3*) arsenic. In support of the last they cite the increase of cases since 1910 when the use of arsphenamine was introduced; but they do state that cases occurring some time after the cessation of treatment with arsenic are real neurorecidives and also mention the possibility of an attack due to the localization of the spirochete in the nerve (a reaction analogous to the Herxheimer reaction). In both of these conditions the treatment with arsenic should be energetically carried on. The unilateral case reported by Thibault and Schulmann[14] is an excellent example of such an occurrence.

The increase of neurorecurrences after 1910 is no real proof of the toxicity of arsenic to the cranial nerves and the seventh nerve in particular. If one examines the literature on facial paralysis in syphilis, one is impressed by the large number of cases reported in or shortly after 1910. These are almost all cases in which one injection of arsphenamine was given. Previous to the introduction of arsphenamine, patients with syphilis were given vigorous treatment with mercury, while in the early days of arsenic therapy the hope was to cure syphilis by one injection of arsphenamine, and mercury was temporarily neglected.

Ravaut,[15] in 1912, attempted to show that so-called accidents of the central nervous system following treatment with arsphenamine were due to a reaction between the arsphenamine and spirochetes already in the central nervous system. He took cerebrospinal fluids several months after treatment with arsphenamine and found a greater number of positive results in the secondary cases. Assuming that this is the period when spirochetes are most numerous in the central nervous system, he drew the deduction that this combination of arsenic and spirochete caused a progressive exacerbation of the cerebrospinal syphilis. However, in his thirty-three secondary cases, the largest total amount given was 3 Gm. in one case, and in twenty-nine cases the total in each was less than 2 Gm. In the light of present knowledge and the generally accepted belief that this is insufficient treatment, it seems reasonable to draw the conclusion that if, as Ravaut assumed, the spirochetes had already invaded the central nervous system, these accidents as well as

14. Thibault, A., and Schulmann: Paralysie faciale periphérique parcellaire d'origine syphilitique, Bull. et mém. Soc. méd. d. hôp. de Paris **43**:68, 1919.

15. Ravaut: Les reactions nerveuses tardives, Presse méd. **20**:181, 1912.

the condition in the cases reported by Rille,[16] Spiethoff [17] and Jennerich [18] were recurrences due to insufficient treatment. The fact that the recurrence occurs well after the cessation of treatment in these cases as well as in the cases of facial diplegia reported by Yamamato [7] and Juan de Azua [19] argues against the arsenic as their cause.

Cases are reported after insufficient therapy with mercury by Quincke,[20] Lannoix and Dujol [21] and Bonnet.[22] Benario,[23] in attempting to prove that as many neurorecidives occur after the use of mercury as after the use of arsenic, cited ten cases in which no arsenic was given. In three of these cases the condition involved the seventh nerve.

In addition to this there are the cases in which arsenic was not used which have been reported by Sir Charles Bell,[24] Montgomery and Culver,[3] H. Ewing,[25] Spiller (as quoted by Ewing [25]), Malthargi [7] and the case reported in this article.

In two cases occurring in the midst of a course of arsenic therapy, one reported by Hudelo and Barbé,[7] the other by Lortat-Jacob, Fernet and Poumeau-Delille,[26] the patients showed signs of intolerance to arsenic, thus making it necessary to stop this treatment. But numerous examples of facial monoplegias in which the patients have been treated successfully by the continued use of the arsenicals can be found in the literature. Most typical of this are the cases of Thibault and Schulmann [14] and Becco.[27] Becco closed his report with the suggestion that intensive treatment with arsenic and mercury is necessary for cure.

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16. Rille: Ueber eventuelle Nebenwirkungen an den Hirnnerven bei Behandlung mit Ehrlich's Präparat 606, Berlin klin. Wchnschr. **47**:2281, 1910.

17. Spiethoff: Umfrage über die Wirkung des Ehrlichschen Arsenobenzol, Med. Klin. **6**:1782, 1910.

18. Jennerich: Umfrage über die Wirkung des Ehrlichschen Arsenobenzol, Med. Klin. **6**:1782, 1910.

19. de Azua, Juan: Neurosifilis postsalvarsanica en un secundario paralysis facial del motor ocular comun, sintomas meningeos difusos, Rev. clin. de Madrid **8**:138, 1912.

20. Quincke: Zur Casuistik der Visceralsyphilis, Deutsches Arch. f. klin. Med. **77**:12, 1903.

21. Lannoix and Dujol: Paralysie faciale double syphilitique, Lyon méd. **118**: 892, 1912.

22. Bonnet: Paralysie faciale double syphilitique, Lyon méd. **118**:893, 1912.

23. Benario: Ueber syphilitische Neurorezidive inbesondere solche nach Quicksilber Behandlung, München. med. Wchnschr. **58**:20, 1912.

24. Bell, Sir Charles: The Nervous System of the Human Body, ed. 3, London, Renshaw, 1844, p. 326.

25. Ewing, H.: Complete Bilateral Isolated Paralysis of the Seventh Nerve, J. A. M. A. **62**:1459 (May 9) 1914.

26. Lortat-Jacob; Fernet, and Poumeau-Delille: Syndrome facio-vestibulaire bilateral de la période secondaire chez un intolérant au novarsénobenzol, Bull. Soc. franç. de dermat. et syph., December, 1927, no. 8, p. 833.

27. Becco: Lähmung des Facialis und Acusticus auf luetischen Basis, Semana méd. **32**:1224, 1925.

The case of Juan de Azua [19] presents a most interesting and illuminating sequence of events. During the secondary period of the disease, the patient received one injection of 4 decigrams of arsphenamine. He showed some signs of intolerance but did not continue treatment, and forty-nine days following this insufficient treatment he presented a bilateral facial paralysis. Further treatment by means of arsphenamine resulted in symptoms which could be classed as a Herxheimer reaction, and which were followed by improvement. Because of the temporary exacerbation of symptoms arsenic was abandoned, and intensive treatment with mercury was continued with lessening of symptoms. It appears that if the patient in this case had been given further arsenic therapy, the improvement would have been more rapid. Juan de Azua concluded by saying that postarsenical neurosyphilis is due to insufficient treatment.

In cases of syphilitic optic neuritis there is great unanimity of opinion in favor of continuing vigorous treatment with arsphenamine. It is the pentavalent arsenicals such as tryparsamide which are toxic to the nervous tissue. In all the reported cases one element is constantly present: infection with syphilis. It therefore seems that paralysis of the seventh or other cranial nerves during the course of syphilis is due to the disease and should be treated as such, as was done in this case and many others already cited.

CONCLUSIONS

1. Facial diplegia in early syphilis is a rare condition.
2. It is most probably due to invasion of the nerve by the disease.
3. Treatment should be vigorously carried out with the most effective measures available unless there is some definite contraindication to the use of any particular drug. There is no special contraindication to the use of arsphenamine.

AUTOINOCULATION DERMATOPHYTOSIS FROM TOE CULTURES OF HUMAN VOLUNTEERS

CLINICAL, LABORATORY, EXPERIMENTAL AND THERAPEUTIC STUDIES IN SUPERFICIAL MYCOTIC DERMATITIS *

CLEVELAND WHITE, M.D.
CHICAGO

In a clinical and laboratory study of a large series of patients suffering with superficial dermatoses considered of mycotic etiology (so-called "ringworm"), fungi in hyphal form could usually be found in extemporaneous alkali preparations from the intertriginous foci (when present) and often in lesions in the immediate vicinity, e. g., areas on the feet in the presence of interdigital lesions of the toes or on the dorsa of the hands when definite active lesions were present on the lateral borders of the fingers. Rarely could hyphae be demonstrated in the more remote areas of the glabrous skin, e. g., areas on the legs when the toes were actively infected, or on the wrists or the forearms when there were definite active lesions present on the fingers. As a number of cases were seen in which yeast cells were found microscopically and culturally in intertriginous foci which one would ordinarily assume to be of hyphomycetic etiology, this report will be confined to those in which hyphae were found. While it has been definitely established by numerous investigators, especially by animal experimentation, that hyphomycetic fungi can be disseminated hematogenously and produce cutaneous manifestations (either by actual invasion of the skin or by their "toxic" effects), the more evident method of transmission in clinical work on man would seem to be direct extension by continuity of a mycotic dermatitis from an adjacent fungus focus, or even by actual transference of fungus material from a more or less distant but still obvious focus.

The etiologic possibilities in areas of dermatitis clinically mycotic but in which it was impossible to demonstrate the threadlike hyphae have been mentioned in a previous communication.[1] To recapitulate these briefly, such involved areas may be caused by: (1) a nonhyphomycetic fungus as *Cryptococcus, Sacchromycetes* or *Sporotrichum* in tissue; (2) *Hyphomycetes* with changed morphology, especially so on broad areas of glabrous skin; (3) bacteria; (4) a toxic or allergic local reaction; or

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* From the Department of Dermatology and Syphilology, Northwestern University Medical School.

1. White, Cleveland: Superficial Yeast Infections of the Glabrous Skin, New York State J. Med. **27**:1116 (Oct. 15) 1927.

(5) an ultramicroscopic virus. Recent reports [2] of clinical and laboratory studies with positive experimental autoinoculations with *Cryptococcus* and the recent authoritative report of Dr. Charles J. White and Dr. J. H. Swartz [3] on their clinical and laboratory observations would seem to justify the claim of pathogenicity of yeast of cryptococci morphology in widespread "eczema-like" eruptions of so-called seborrheic dermatitis distribution. So the first of the foregoing possibilities is probably an actuality. The absence of an obvious interdigital fungus focus is noteworthy in many of these cases, although the antecubital spaces have been considered as a possible focus.[4]

The probabilities of superficial cutaneous-invading hyphomycetic fungi changing their morphology when implanted apart on nonintertriginous areas have been considered by me many times when endeavoring to analyze the situation in which hyphae were present in areas of clinically mycotic dermatitis. Repeated potassium hydrate preparations and cultures were taken from such areas which were found associated with foci of hyphae recognizable on microscopic examination. All material was taken and examined by me personally, and no hyphae could be demonstrated or positive cultures of *Hyphomycetes* obtained in the nonintertriginous areas. With these observations and thoughts in mind, four patients were studied experimentally, and the results were considered instructive enough to form the basis of this report. Inability to secure a larger series of such volunteers seriously handicaps progress. Two cases, with the experimental data, will be reported in some detail.

ILLUSTRATIVE CASE REPORTS AND EXPERIMENTAL STUDIES

CASE 1.—A young physician had had "ringworm" between the toes for a number of years. During an acute local exacerbation, scrapings (after 10 per cent potassium hydrate digestion) showed microscopically long, branching hyphae; *Trichophyton interdigitale* grew in cultures. The cultures had not shown any bacteria of any kind. Small portions of culture growths were transplanted to the patient's back on areas superficially scarified; similar scarified areas without fungus implantation were used as a control.

In three days the inoculated areas showed erythematous reaction, with small crusting centers; in seven days, the reaction was more marked; nearly all the areas were elevated and crusting. At the end of ten days, the inoculated area was not so marked as at the end of the first week. The area gradually decreased in size until it had practically disappeared by the end of one month; after that a

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2. White (footnote 1); Superficial Yeast Infections of the Glabrous Skin (Further Clinical and Experimental Studies), Arch. Dermat. & Syph. **18**:429 (Sept.) 1928.

3. White, Charles J., and Swartz, J. H.: Cryptococcosis Epidermica, Arch. Dermat. & Syph. **18**:692 (Nov.) 1928.

4. White, Charles J.: Fungus Diseases of the Skin, Arch. Dermat. & Syph. **15**:387 (April) 1927.

slight erythematous reaction persisted for several weeks. Potassium hydroxide[5] examination and cultures were taken at frequent intervals. On the seventh day, some hyphae were still to be found. By the tenth day, it was extremely difficult to find any segments, and there was none at the end of the twelfth day. Cultures were negative after the seventh day.

Until all active signs of the inoculation had disappeared, a protective bandage was kept over the involved areas to prevent any external irritation or contamination.

An interesting observation at a later date was the "mosaic" form in potassium hydroxide examination of the scrapings from between the toes; no hyphae could be found as on previous examination, and nothing grew on cultures.

At the same time that the cultures were inoculated, scrapings were taken from the feet and inoculated on the back. The scrapings were considered to have numerous hyphae, as immediate adjacent scrapings showed a large number microscopically. A positive inoculation was evident; the objective observations were similar, but not so marked as with the "massive" dose from the pure culture just described. Scrapings on the third day showed a few hyphae and other segments simulating hyphae. On the fifth day, no segments or hyphae of any kind could be found. Cultures from the artificial lesions were repeatedly negative. In three weeks all active signs had subsided except a mild erythematous area which persisted about a week longer.

During the height of both positive reactions after inoculation, the patient said that there was some pruritus. After the disappearance of hyphae from the sites of both inoculations, a few double-contoured, occasionally budding organisms were found. These yeastlike fungi may have been: (1) secondary infection of an existing inflammatory area; i. e., from organisms already on the skin or tinea versicolor; (2) mutation form or spore formation of the planted hyphomycetic implantation, or (3) saprophytes. No yeast forms ever grew in repeated cultures, so that a conclusion cannot be drawn until after further investigations.

CASE 2.—A woman, aged 31, a housewife, was first seen at the dermatology clinic of Northwestern University Medical School on Sept. 27, 1928, complaining of an eruption on the lateral borders of the fingers, and on the hands, the neck and various portions of the body above the waist. The itching had been intense, and the patient said that an eruption usually occurred on the areas she scratched, and the other areas were made worse. She said that the skin trouble had started as "blisters" in the third interspace of the right hand four years before presentation. The eruption gradually spread on the dorsum of the right hand, and then the left hand became involved. In six months both axillae and portions of the neck were partially affected. In the intervening time, until she was observed at the clinic, areas of the chest became involved, and then there were intermittent periods of both subjective symptoms and objective signs of varying degree.

Examination of the patient showed large discrete and confluent erythematosquamous areas on the neck, on various parts of the trunk, on the forearms and on the dorsa of the hands. On the lateral borders of some of the fingers were some deep vesicles and also areas of eroded vesicles with some crusting. Examination of the interdigital spaces of the feet showed evidence of active mycotic infection, e. g., eroded areas with sodden periphery with some contiguous dorsal and plantar erythematosquamous areas and deep vesicles. When these areas were discovered, the patient quickly volunteered the information that the eruption orig-

5. This refers to the well known extemporaneous preparations made by simply clearing materials in potassium hydroxide solution.

inally started in this region; at any rate, on further questioning, it was ascertained that the interdigital lesions of the feet had been present for several years before the hands were infected.

Results of a general physical examination were negative. The blood pressure was considered normal. Results of urinalysis and Wassermann tests of the blood were negative.

Laboratory Examination.—Scrapings were taken from all areas for direct potassium hydroxide examination, and cultures were made on isolation mediums. Potassium hydroxide from the toes revealed many long branching hyphae; in cultures of the vesicles on the fingers, so-called "mosaic" forms were found, and in those from the other areas, an occasional double-contoured, yeastlike body but no real budding. Cultures from the toes were positive, and the organism found was considered a member of the *Trichophyton gypseum* group. Cultures for fungi from all other areas were negative. *Staphylococcus albus* grew from cultures of several areas of the neck and chest.

Inoculations (Man).—Epidermal inoculations with the recovered *Staphylococcus albus* failed to produce any manifest lesions. Material from the positive toe cultures was transplanted to superficially scarified areas on clinically normal areas of skin on the back and right axilla. No bacteria grew at any time in any of the cultures used for inoculation. Positive "takes" were apparent on the fourth day: the one on the back had an erythematous areola much wider than the original inoculated area, and the center was crusting appreciably. The "take" in the axillary region was more erythematous than that on the back, and there was much less crusting. By the tenth day, hyphae could no longer be found on the back, but in the axilla they were present until the sixteenth day. The lesion at the site of inoculation on the back had completely involuted (protected from external trauma and irritation) by the twenty-eighth day. The experimental axillary lesion was present approximately a week longer. Positive cultures from the induced lesions were obtained on the area of inoculation on the back up to and including the eighth day; no positive cultures were ever obtained from the axillae. The biologic changes of the skin in the intertriginous folds incident to perspiration, etc., could easily prolong a mycotic dermatitis in such areas.

In these produced lesions, yeastlike fungi were found microscopically after the disappearance of hyphae. Cultures were negative for yeast growths at all times. The probabilities of these observations were previously discussed.

One month after complete subsidence of these artificially produced lesions the experimental work was repeated on the same patient in the same way as described. The results were essentially the same, except for minor variations in the time element, which no doubt is dependent on unknown biologic and possibly immunologic skin factors, and which would vary, of course, with different patients and in the same patient under different local environment.

Blood cultures were taken at intervals during the inoculations into this patient, but they were always negative.

COMMENTS AND CONCLUSIONS

Experimental autinoculations in man with material from positive cultures from fungus foci and from positive fungus scrapings were performed with a loss of hyphae morphology in four cases, two of which are reported in some detail. It took from ten to sixteen days, depending on the location, for the hyphae to disappear from the lesions in which a

loopful of fungus growth had been implanted; relatively speaking, this was a "massive" inoculation of hyphae compared to contained fungus threads in scraping. In the course of five days, hyphæ could not be found in the inoculations from the scrapings of the "takes." On potassium hydrate preparations, after the disappearance of hyphae in the produced lesions, yeastlike organisms were found; no conclusion can be drawn as to whether these were the organisms of a secondary invasion, saprophytes or actually changed forms of the implanted hyphomycetes. However, no positive yeast cultures were obtained in this small number of cases.

While it is conceded that widespread cutaneous eruptions may and do appear as the result of dissemination of fungi or their toxins, a more manifest explanation in many cases would seem to be that these infections are the result of external transference or contiguous activity of hyphomycetic fungi which produce lesions in which the hyphal form disappears a short time after transplantation to the glabrous skin. The possibility must be kept in mind that fungi which might exist on normal skin can assume pathogenic properties. The produced lesions were evident for varying periods of time following the disappearance of hyphae. The duration of such lesions could no doubt be prolonged by not protecting them from external trauma and other sources of irritation, as demonstrated in a former paper.[2]

Change of morphology of superficial invading hyphomycetic fungi on glabrous areas of skin could thus explain the etiology of patches of dermatitis associated with definite intertriginous hyphomycetic fungi foci and also some such areas in which there is no obvious focus.

LEUKEMIA AS A SEQUEL IN SKIN DISEASE*

D. E. H. CLEVELAND, M.D.
VANCOUVER, BRITISH COLUMBIA

Two years ago I reported a case of Raynaud's disease developing during the course of dermatitis herpetiformis.[1] The course of events in this case subsequent to the time of publication I believe to be of sufficient interest to justify reporting.

The patient was not seen after April, 1927, when his condition was as reported in the aforementioned paper, until Oct. 10, 1928. He then stated that the eruption, which had been quiescent for over a year, had been a little more active during the few weeks previously.

The skin showed nothing of special interest, but it was observed that there was more swelling of the lymph nodes than had previously been noted, especially in the inguinal and cervical groups. In the right groin they formed a large mass about the size of a tangerine. The fingers had not given him much trouble. Six days later he was exhibited at a clinical meeting, when he was seen and examined superficially by a number of physicians. Ten days after this he came to see me, complaining of "stiffness of the belly when he stooped over," and feelings of soreness and fulness in the upper part of the abdomen. The abdomen was full and moderately tense, and there were signs of the presence of free fluid. The lower pole of the spleen was palpable three fingerbreadths below the left costal margin and was slightly tender.

There was a leukocytosis of 18,600. Myelocytes were numerous in the blood film. The patient received deep radiation of the splenic area over a period of three months, during which time the white cell count rose as high as 34,600 and dropped to 17,000. Enlarged nodes in the cervical, axillary and inguinal regions were also radiated and reduced in size, but he became progressively weaker and the ascites increased. He died on May 6, 1929.

This case presents a remarkable series of events. Briefly the patient apparently had no trouble with the exception of a typical dermatitis herpetiformis, which lasted for four years without any other disturbance. Then he developed symptoms of Raynaud's disease, typical even to the x-ray observations in the terminal phalanges. More than two years later he began to show unequivocal signs of a splenomyelogenous leukemia, of which he died eight months later.

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* Submitted for publication, May 21, 1929.

1. Cleveland, D. E. H.: Raynaud's Disease: Report of Two Cases Coexisting with Other Dermatoses (Dermatitis Herpetiformis, Lupus Erythematosus), Arch. Dermat. & Syph. **16**:548 (Dec.) 1927.

It is true that there was always a considerable amount of enlargement of lymph nodes, but not much more than is usually found accompanying any itching skin eruption which is constantly being scratched and excoriated. While the spleen was observed to be slightly enlarged some years previously, and there was a constant slight leukocytosis with an increased proportion of lymphocytes, frequent and regular examinations of the blood up to April, 1927, had never revealed any abnormal cells. In October, 1928, myelocytes were numerous.

I have no hypothesis to present based on the observation of this case. A common causality or other close relationship of the three conditions is suggested only by their individual comparative rarity, their unknown etiology and their usual attribution to a toxicosis of obscure origin. Other similar observations may be reported from time to time, and eventually there may be an accumulation of data from which some conclusions may be derived.

For this reason I should like to report briefly at this time another case observed by me four years ago which appears to have some points in common with the one just dealt with.

REPORT OF CASE

A man, aged 55, was seen in April, 1925. He had always had good health, but for four years previously had had slightly raised red patches on the cheeks which were sometimes scaly. All had been cleared up with applications at various times of carbon dioxide snow, leaving a few small depressed scars. He presented one large plaque on the left cheek, and several smaller ones, clinically typical of lupus erythematosus. His own physician reported that general examination revealed no gross abnormalities elsewhere in the body. Much improvement took place during the next two months with the use of radium on the larger lesions, and carbon dioxide snow on the smaller ones. The blood counts were normal, and no abnormal cells were seen. The urine showed a few hyaline casts on one occasion.

Sixteen weeks after he was first seen he developed an urticarial eruption with large elements over the upper part of the body and the head. This subsided in about ten days, but did not entirely disappear. A month later ecchymoses began to appear over the shins, and on examination he was found to have slight enlargement of the spleen and lymph nodes, and there were symptoms of free fluid in the abdomen. These symptoms increased rapidly in severity, hemorrhage occurring from all mucous membranes. Examination of the blood showed in addition to secondary anemia, 44,000 lekuocytes, of which 93 per cent were lymphocytes. Death occurred in September, 1925, five months after he was first seen by me.

This was a case of acute lymphatic leukemia, developing after a lupus erythematosus of nearly four and one half years' duration. There were no recognizable symptoms of the leukemia prior to three months before death, although the patient had been under observation and carefully examined at that time.

It is unfortunate that autopsies could not be obtained in either of the two cases reported.

VINCENT'S ANGINA

A CASE OCCURRING DURING ANTISYPHILITIC TREATMENT *

GEORGE A. WILLIAMS, M.D.
ATLANTA, GA.

Lesions due to, or characterized by the presence of, Vincent's organism—a long, slender spirillum found in symbiosis with a large fusiform bacillus—are undoubtedly surface infections in nearly all instances. Nevertheless, arsphenamine is given intravenously for the condition, as well as applied as pastes to the ulcers, and this method of treatment is endorsed frequently in the literature on the subject. The spirocheticidal properties of the arsphenamines are doubtless responsible for this therapy, but since Vincent's organism responds readily to other less dangerous and decidedly less expensive drugs, it seems that a case of infection with Vincent's organism which occurred during and in spite of arsphenamine therapy for syphilis merits reporting.

REPORT OF CASE

Miss L. M., a white prostitute, aged 21, seen on Feb. 8, 1927, was found to be suffering from a chancroid of the fourchet for which local applications were used with success. She had recently been delivered of a stillborn child at the end of the eighth month of pregnancy and had a general glandular enlargement. The Wassermann reaction was negative, but owing to the clinical observations and the fact that the patient knew that she had been frequently exposed to infection by persons known to have syphilis, antisyphilitic therapy was instituted. Potassium iodide and mercuric iodide were given in gradually increasing doses. On February 12, 0.45 Gm. of neoarsphenamine was administered intravenously without undue reaction. The dosage of the arsenical compound was increased to 0.6 Gm. seven days later, and this dosage was repeated on February 26. On the day following the third injection, the patient noticed that her throat was sore; it steadily grew worse and she sought relief two days later. At this time, the oral pharynx was moderately injected, and the superior glands of the left anterior cervical group were palpable and tender. A small ulcer about 7 mm. in diameter was present on the left tonsil. Smears from the dirty gray membrane which covered this lesion revealed Vincent's organism in profusion (Dr. E. D. Shanks). Sodium biborate applied as a paste to the ulcer at frequent intervals resulted in a clinical recovery in three days, and no organisms were found on or after the fourth day of the treatment.

This case is reported because of the inability of neoarsphenamine in ordinary dosage to prevent the development of Vincent's infection in a patient who had not previously suffered from the disease. It is not believed that the seriousness of the usual case of Vincent's angina warrants the use of the arsphenamines, on account of their relative danger and expense, until other accepted remedies are given a fair trial. Vincent's angina is respected as serious by many physicians, but undoubtedly, in many of the reported mortalities, there has only been a secondary invasion of the organism into other oral lesions.

1121 Candler Building.

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VIRULENT ANTHRAX BACILLUS FROM A CASE OF MALIGNANT PUSTULE IN MAN*

ADELE E. SHEPLAR, M.D.
AND
MARJORIE B. PATTERSON
NEW YORK

Anthrax in this country has become a relatively uncommon disease in recent years, due in part to the activities of the United States Public Health Service and in part to the Bureau of Animal Industry in Washington which supervises the importation of such raw materials as animal hides, hair and wool from countries in which the disease is prevalent. The sources of infection have thus been materially reduced, so that many of the cases reported in the last few years have been those of malignant

The Incidence of Human Anthrax Infection in New York in the Years from 1918 to 1928 Inclusive

Year	Cases	Deaths	Mortality per Cent
1918	15	4	26.6
1919	14	9	64.2
1920	12	1	8.3
1921	9	4	44.4
1922	8	3	37.5
1923	6	1	16.0
1924	1	0	0
1925	3	1	33.3
1926	1	0	0
1927	4	2	50.0
1928	1	0	0
Total 11	74	25	33.7

pustule of the face or neck, traceable in most instances to the use of infected shaving brushes. Industries employing hair and hides are responsible for a small number of cases.

In the last eleven years there have been seventy-four cases in New York. The accompanying table illustrates the decrease in incidence.

REPORT OF CASE

A man, aged 39, presented himself at the Skin Clinic of the Post-Graduate Medical School and Hospital on the afternoon of Dec. 31, 1928, and was sent immediately to the laboratory. He complained of a swelling on the right side of his neck, of five days' duration. The lesion was elevated and presented a blackish, crater-like center, 15 mm. in diameter, surrounded by confluent vesicles or blebs which contained a pink serous fluid; the total area approximated 50 mm. in diameter. The surrounding tissue was indurated, suggesting a deep-seated

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* From the Department of the Laboratories, New York Post-Graduate Medical School and Hospital.

infection. There were no constitutional symptoms at this time. The family history was negative. He was employed as a chauffeur for a furniture manufacturer, and he occasionally helped in upholstery work. On December 25, he noticed a small pimple which he described as having a white head. Unintentionally, he scratched this area with his hand during the afternoon of the same day. The following day, December 26, on his return from work, he complained of headache, chills and general malaise. During the next four days he remained at home, applying wet compresses to the infected area of the neck. The lesion, however, became progressively larger and did not seem to respond to home remedies. The patient then applied for treatment at the clinic on December 31.

Smears made from serum obtained from the vesicles by puncture with a small needle revealed large numbers of spherical organisms, evidently staphylococci, and a few large rods. The latter were so few in number that a rapid diagnosis could not be made. Incision was proposed, not as a therapeutic measure, but in the hope that more favorable material for immediate presumptive microscopic diagnosis might be available and serum treatment instituted without the delay entailed in cultural examination. The patient, however, refused permission, so that cultures made from the serum of the vesicles were relied on for diagnosis. Plate cultures examined after incubation showed large numbers of colonies of staphylococci and a smaller number of grayish-white, flat granular colonies with irregular margins, which under low magnification proved to be of the typical Medusa-head type. Smears showed large gram-positive, square-ended rods containing many oval spores. The organism was nonmotile in a hanging drop preparation. Five tenths of a cubic centimeter of a saline suspension of a typical colony fished from the plate was injected intraperitoneally into a mouse, causing death within fifteen hours. Autopsy showed no macroscopic changes in the organs, but smears from the liver, spleen and kidneys, as well as from the heart blood, showed many large, square-ended, encapsulated rods. A culture of the heart blood was positive for *B. anthracis*. Subcutaneous inoculation of 0.5 cc. of the aforementioned saline emulsion into a guinea-pig weighing 350 Gm. produced death in thirty-six hours. Autopsy revealed the characteristic pale pink, gelatinous edema of the subcutaneous tissues, extending from the inguinal to the axillary regions. All the smears from these tissues as well as from the liver, spleen, kidneys and heart blood showed large numbers of square-ended encapsulated rods occurring in pairs and short chains. A culture of the heart blood was positive for *B. anthracis*.

A fragment of the infected spleen of this animal was transferred under aseptic conditions to a subcutaneous pocket of a rabbit; this animal, in turn, died after five days with extensive hemorrhagic, gelatinous edema about the point of inoculation. A secondary infection was present, however, and necropsy disclosed a complicating old pericarditis, possibly due to previous use of the animal for bleeding by heart puncture. A second effort to employ this original technic of Pasteur was made by inoculating another rabbit with a loopful of a twenty-four hour agar slant culture of the third cultural generation of this strain placed in a similar subcutaneous pocket. This animal died after sixty hours. Subcutaneous hemorrhagic edema was slight and limited to the region of the inoculation, an area approximately 40 by 50 mm. Anthrax bacilli were distributed through all the organs and grown from the heart blood.

The virulence of this strain was apparent from its ability to kill a rabbit in two and one-half days. It is our belief that many of the strains isolated in this country of recent years have been less pathogenic, not always attaining virulence similar to the Pasteur virus strain that is capable of killing rabbits.

The patient did not return to the Post-Graduate clinics for treatment so that the case was reported to the health authorities that he might be followed up and treatment instituted. Serum therapy was given at the Kingston Avenue Hospital, Brooklyn, where local as well as intravenous and intramuscular treatment has been employed in recent years. Their method, instituted by Regan,[1] was to give three or four injections of from 2 to 3 cc. of antianthrax serum at points equidistant from one another at the sides of the pustule or in the border of indurated tissue immediately surrounding it.

This patient received on the first day of treatment a total of 150 cc. of antianthrax serum: 50 cc. locally, 50 cc. intravenously and 50 cc. intramuscularly. The second day 50 cc. was given intramuscularly. Recovery ensued, and the patient was dismissed from the hospital at the end of two weeks.

It must be emphasized that incision or excision are no longer employed as therapeutic measures, as the death rate has been shown to be higher in these cases than in those in which surgical treatment was not given. Blood and lymph are thus brought in contact with infected tissues, causing wide extension of the process. Nearly ten years ago, Eichorn[2] of the Bureau of Animal Industry perfected a potent antiserum for use in the treatment of persons with anthrax infection, which no doubt has reduced the mortality rate.

COMMENT

The source of the infection here reported has not been definitely ascertained. The patient said that he had been shaved three days prior to the appearance of the lesion. The barber shop frequented by him was closed for twenty-four hours and brushes removed for examination by the health authorities, with no positive observations to date. It is uncertain whether the supplies used in the manufacture of furniture were responsible for the source of infection in this patient.

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1. Regan, Joseph C.: Am. J. M. Sc. **162**:406, 1921.

2. Eichorn, A.; Berg, W. N., and Kelser, R. A.: J. Agric. Research **8**:37, 1917.

EXPERIMENTAL STUDIES IN ECZEMA

IV. A CORRELATION OF POTASSIUM-CALCIUM RATIO IN THE SERUM AND IN THE SKIN OF RABBITS WITH THE IRRITABILITY OF THE SKIN *

JOSEPH V. KLAUDER, M.D.
AND
HERMAN BROWN, B.S.
PHILADELPHIA

In previous communications,[1] results of experimental studies were reported from which it appears that in the rabbit there is an inverse relation between the degree of cutaneous irritability and the calcium content of the skin and a direct relation between the degree of cutaneous irritability and the potassium content of the skin. In another communication, experimental data were reviewed which show that the potassium-calcium ratio acts as a regulator of the autonomic nervous system. Results of experimentation were reported in which the obverse of this principle when applied to the skin was studied. The vegetative nervous system in rabbits was pharmacologically disturbed. As a result of such study, it was concluded that cutaneous irritability in the rabbit was altered following the administration of drugs that act on the autonomic nervous system. It appeared from data submitted that the potassium-calcium ratio in the skin of most of the rabbits studied was altered by the administration of such drugs, and that the autonomic nervous system is concerned in altering cutaneous irritability in the rabbit, perhaps through a disturbance of the potassium-calcium ratio.

PURPOSE OF STUDY AND METHOD EMPLOYED

In our original study,[2] serum calcium in the rabbit was compared to the cutaneous irritability. Cutaneous irritability was experimentally altered, and repeated determinations of calcium were made. The

* Submitted for publication, June 6, 1929.

* From the Research Institute of Cutaneous Medicine.

1. Klauder, J. V., and Brown, Herman: Experimental Studies in Eczema: I. Study of the Sensibility of the Skin of Rabbits to Chemical Irritants Under Experimentally Induced Conditions, Arch. Dermat. & Syph. **11**:283 (March) 1925; II. A Correlation of the Chemistry with the Irritability of the Skin of Animals Under Normal and Under Experimentally Induced Conditions, ibid. **15**:1 (Jan.) 1927; The Rôle of the Sympathetic Nervous System and Calcium-Potassium Ratio in Altering Cutaneous Irritability in the Rabbit, ibid. **19**:52 (Jan.) 1929.

2. Footnote 1 (second reference).

change in calcium content was slight and within normal limits. In many instances the change was in the expected direction. On the whole, the state of cutaneous irritability could not be definitely correlated with the calcium content of the blood.

In view of the reciprocal relation between calcium and potassium (this relation has been reviewed in other communications [3]), it becomes more pertinent to correlate the serum potassium-calcium ratio in rabbits, rather than the calcium alone, with cutaneous irritability.

Our purpose in the study now reported is to correlate the potassium-calcium ratio and the calcium-phosphorus ratio in the serum of rabbits with cutaneous irritability. The calcium-phosphorus ratio was included in the study, since these metals are in reciprocal relation in at least one disease—rickets.

Adult healthy rabbits of both sexes, and of variable color and weight were used. The method of determining the irritability of the skin of rabbits was that employed in prior studies and described in detail in another communication.[4] Briefly stated, a definite amount of croton oil diluted with olive oil was applied to the smooth skin; the inflammatory reaction was expressed in terms of from 1+ to 3+ reactions.

The irritability of the skin was tested at the same time the blood was examined. Blood was obtained by heart puncture. Specimens were obtained in the morning before the animals were fed.[5] The study was conducted in different seasons.[6]

Total serum calcium was determined according to the method of Kramer and Tisdall [7] as modified by Tisdall,[8] and serum potassium was determined by the method of Kramer and Tisdall.[9] Serum was separated from the blood as soon as it was withdrawn. Serum in which hemolysis was visibly present was discarded. The presence of

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3. Footnote 1 (second and third references).

4. Footnote 1 (first reference).

5. It has been shown by Culhane (Biochem. J. **21**:1014, 1927) that there is an increase of serum calcium in rabbits after they are fed.

6. It has been shown by Culhane (Biochem. J. **21**:1014, 1927) and by Grant and Gates (Proc. Soc. Exper. Biol. & Med. **22**:315, 1924-1925) that normal rabbits show a seasonal variation in serum calcium. Minimal values are present in January, and high values are present in May and November.

7. Kramer, B., and Tisdall, F. F.: A Simple Technique for the Determination of Calcium and Magnesium in Small Amounts of Serum, J. Biol. Chem. **47**:475, 1921.

8. Tisdall, F. F.: A Note on the Kramer-Tisdall Method for the Determination of Calcium in Small Amounts of Serum, J. Biol. Chem. **56**:438, 1923.

9. Kramer, B., and Tisdall, F. F.: A Clinical Method for the Quantitative Determination of Potassium in Small Amounts of Serum, J. Biol. Chem. **46**:339 1921.

hemolysis was not determined by spectroscopic examination. The phosphorus content of serum was determined by Benedict and Theis.[10]

RESULTS OF STUDY

Table 1 shows the total serum calcium, potassium, phosphorus, the potassium-calcium ratio, the calcium-phosphorus ratio and the cutaneous irritability in each of thirty-three rabbits.

Inorganic Blood Constituents and Irritability of the Skin

	Irritability of Skin to Dilutions of Croton Oil					Mg. per 100 cc. of Blood Serum			Ratios K/Ca	Ratios Ca/P	
Rabbit	1-5	1-10	1-20	1-30	1-50	Ca	K	P			Comment
36	+	±	—	—	—	13.2	14.9	4.2	1.13	3.14	
34	+	+	—	—	—	12.7	23.6	5.8	....	2.14	Skin tested, blood examined after all green diet
7 C 1	2+	+	±	±	—	14.7	22.0	...	1.49	....	
40	2+	+	+	±	—	14.4	17.7	5.8	1.23	2.49	Skin tested, blood examined after all green diet
41	2+	+	+	±	—	15.5	19.4	5.3	1.25	2.92	
41	2+	+	+	±	—	14.7	18.4	6.1	1.25	2.41	Skin tested, blood examined after all green diet
1	2+	+	+	±	—	14.0	22.7	4.2	1.62	3.33	
2	2+	+	+	±	—	14.4	22.4	5.6	1.56	2.57	
1 K	2+	+	+	±	—	14.0	17.8	5.9	1.27	2.37	
81 R	2+	+	±	±	±	12.8	18.8	...	1.47	....	
LUK 4	2+	+	+	±	—	15.2	19.0	...	1.25	....	
39	2+	+	+	±	±	14.8	16.1	4.8	1.09	3.09	Skin tested, blood examined after all green diet
3 SK	2+	+	+	±	±	15.0	20.1	...	1.34	....	
35	2+	2+	+	±	—	14.9	17.8	3.9	1.20	3.82	
4 K	3+	+	+	±	—	13.7	21.0	5.1	1.53	2.69	
3	3+	2+	+	—	—	14.0	17.0	5.0	1.21	2.80	
35	3+	2+	+	±	—	15.1	19.4	4.6	1.28	3.09	Skin tested, blood examined after all green diet
40	3+	2+	+	±	±	13.5	21.3	4.6	1.58	2.94	
11	3+	2+	+	+	+	15.4	20.5	5.6	1.33	2.75	Skin tested, blood examined after all green diet
9 C	3+	2+	2+	+	±	14.5	20.0	5.2	1.38	2.79	
3 C	3+	2+	2+	+	+	14.7	19.2	...	1.30	....	
19	3+	2+	2+	2+	+	15.3	19.9	4.7	1.30	3.25	
8	3+	2+	2+	2+	+	13.4	19.2	4.7	1.43	2.8	Skin tested, blood examined after all green diet
38	3+	3+	2+	+	+	14.0	26.3	4.6	....	3.04	Slight hemolysis of serum
29	3+	3+	2+	+	+	13.0	21.3	5.2	1.64	2.50	
39	3+	3+	2+	2+	2+	14.0	19.2	5.9	1.37	2.37	
11	3+	3+	3+	2+	2+	13.2	24.9	5.0	1.88	2.64	
34	3+	3+	3+	2+	2+	12.0	24.6	5.1	2.05	2.35	
28	3+	3+	3+	2+	2+	13.7	22.7	4.6	1.66	2.98	
30	3+	3+	3+	2+	2+	13.9	23.4	5.2	1.68	2.67	
32	3+	3+	3+	3+	2+	13.5	21.3	4.0	1.58	3.48	
33	3+	3+	3+	3+	2+	13.0	19.2	4.5	1.48	2.89	
8	3+	3+	3+	3+	3+	13.0	23.4	4.2	1.80	3.09	

In this study the serum potassium-calcium ratio can be correlated with the cutaneous irritability in the same rabbit. The curve of this ratio in relation to cutaneous irritability is graphically shown in chart 1.

10. Benedict, S. R., and Theis, R. C.: A Modification of the Molyodic Method for the Determination of Inorganic Phosphorus in Serum, J. Biol. Chem. **61**:63, 1924.

In the compilation of this chart, a unit of skin irritability is a 1+ reaction of the skin to the chemical irritant employed in testing the skin and is represented by 10. A ± reaction is represented by 5; thus, 3+ reaction becomes 30 units. The total of such units in each experiment shown in table 1 is plotted with the potassium-calcium ratio in the same experiment.

It will be seen in the chart that a decreased cutaneous irritability is associated with a low serum potassium-calcium ratio and an increased cutaneous irritability with a high potassium-calcium ratio. The lowest ratio of 1.1 in the series was associated with 15 units of skin irritability (rabbit 36, table 1), and the highest ratio of 2.0 was associated with 130 units of skin irritability (rabbit 34, table 1). These were the most

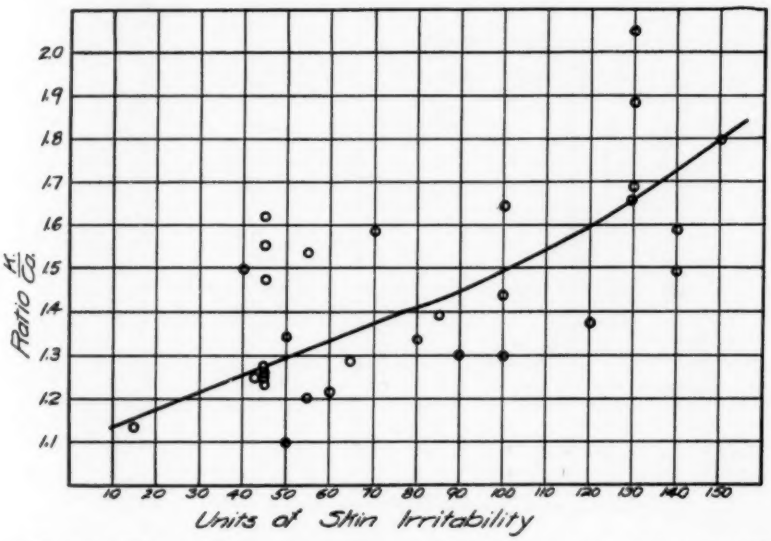

Chart 1.—The relation of serum potassium-calcium ratio to skin irritability.

striking instances of the correlation of serum potassium-calcium ratio with the cutaneous irritability. As shown in chart 1, some of the other experiments, however, were less pronounced in this correlation.

It was not possible to correlate the serum calcium-phosphorus ratio with cutaneous irritability, nor was it possible to correlate the total serum calcium with cutaneous irritability. The latter confirms our observations in another study of which mention has already been made.

COMMENT

A correlation of a low serum potassium-calcium ratio and decreased cutaneous irritability and a high serum potassium-calcium ratio with increased cutaneous irritability is in line with the results of our previous studies which show that there is an inverse relation between the degree

of cutaneous irritability in the rabbit and the calcium content of the skin and a direct relation between the degree of cutaneous irritability and the potassium content of the skin.

In a previous study [2] in which it was shown that there was an inverse relation between the degree of cutaneous irritability in the rabbit and the calcium content of the skin, a chart was shown which graphically represented this inverse relation. This chart is now reproduced as

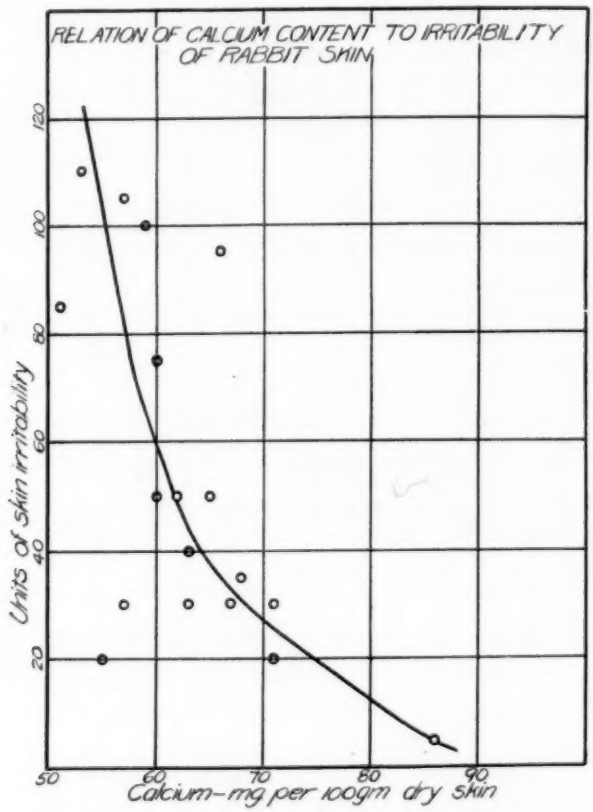

Chart 2.—Relation of calcium content to irritability of rabbit skin.

chart 2 and is shown for comparison. In its compilation, the unit of skin irritability employed is the same as that shown in chart 1.

At the time this study was made, we did not express our results in terms of the potassium-calcium ratio. It becomes pertinent to the study herein reported to correlate the potassium-calcium ratio in the skin with cutaneous irritability. From the figures of the potassium and calcium content of the skin obtained in this previous study, we now calculate the ratio and compare it with the cutaneous irritability. This ratio is graphically represented in chart 3 and shows that the potassium-

calcium ratio correlates the cutaneous irritability, that is, a low ratio is associated with a decreased cutaneous irritability and a high ratio with an increased irritability. This correlation is similar to that existing between the serum ratio and the cutaneous irritability (chart 1).

It is important to note that no correlation could be made with the serum calcium and cutaneous irritability, yet such correlation existed between the calcium content of the skin and cutaneous irritability. This doubtless shows that calcium metabolism in the skin is more intimately concerned in governing cutaneous irritability than is the total serum calcium.

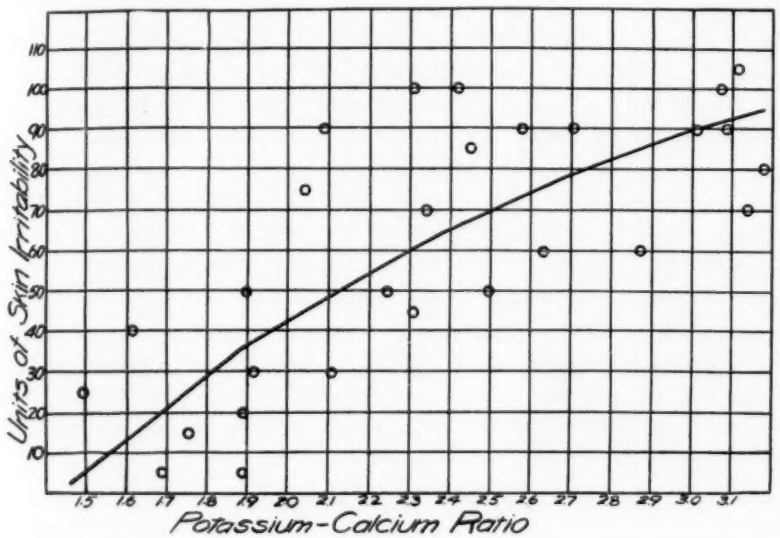

Chart 3.—The relation of potassium-calcium ratio in the skin to skin irritability.

CONCLUSIONS AND SUMMARY

Total serum calcium in rabbits did not correlate cutaneous irritability in the series of animals studied. On the other hand, such correlation was possible with the potassium-calcium ratio. A low ratio was more likely associated with a decreased irritability and a high ratio with an increased irritability. The correlation, striking in some animals and less striking in others, is graphically represented.

In another series of rabbits (a previously reported study), it was shown that there is an inverse relation between the degree of cutaneous irritability and the calcium content of the skin (which is graphically represented) and a direct relation between the degree of cutaneous irritability and the potassium content of the skin. From figures of

potassium and calcium content of the skin and degree of irritability previously reported, the potassium-calcium ratio was determined and graphically represented in relation to cutaneous irritability. The potassium-calcium ratio in the skin correlates cutaneous irritability in a manner similar to the serum potassium-calcium ratio.

From evidence submitted, it appears that the serum potassium-calcium ratio is more concerned in governing cutaneous irritability than is the total serum calcium and that calcium metabolism in the skin is more concerned in governing cutaneous irritability than is the serum calcium.

We have shown that in one series of rabbits there is a direct relation between the serum potassium-calcium ratio and the degree of cutaneous irritability, and in another series, a direct relation between the potassium-calcium ratio in the skin and the degree of cutaneous irritability. By deduction there is a direct relation between the ratio in the serum and the ratio in the skin and the degree of cutaneous irritability in the same animal.

In a previous study, it was shown that a disturbance of the sympathetic nervous system in rabbits altered both the potassium-calcium ratio and cutaneous irritability in the same direction. Since the ratio in the serum is in direct relation to cutaneous irritability, it appears by deduction that such disturbance of the sympathetic nervous system alters the serum potassium-calcium ratio.[11] It would therefore appear that the serum potassium-calcium ratio, the potassium-calcium ratio in the skin, cutaneous irritability and the sympathetic nervous system are interrelated. This interrelation is schematically represented in chart 4.

CLINICAL COMMENTARY

It is interesting to note that in the study herein reported, the total serum calcium of rabbits alone did not correlate the cutaneous irritability. Such correlation was possible with the potassium-calcium ratio. This is pertinent in view of the conclusions drawn or inferred from studies of the total serum calcium content in skin diseases and other diseases.

In interpreting the significance of total serum calcium, the following considerations should be borne in mind: The total serum calcium is not in the same state of chemical combination. Salvesen and Linder [12] and

11. This deduction is substantiated by the report of Kylin (Ueber die Einwirkung der Parathyroid Medikation auf die Probatorische Adrenalreaktion und auf den Gehalt des Blutes an K. und Ca., Acta. med. Scandinav. **67**:287, 1927). He conducted a study in patients comparable to ours in rabbits, in which he altered the potassium calcium ratio in the serum of patients of the vagotonic and sympathicotonic type by the administration of parathyroid.

12. Salvesen, H. A., and Linder, G. C.: Observations on the Inorganic Basis and Phosphates in Relation to the Protein of Blood and Other Body Fluids in Bright's Disease and in Heart Failure, J. Biol. Chem. **48**:617, 1923.

others have shown that part is in combination with protein in a non-diffusible form and hence is not easily available for tissue utilization. From dialysis and ultrafiltration experiments in vitro, it seems that from 50 to 70 per cent of the blood calcium is diffusible (Rona and Takahashi [13] and Cushny [14]). How much of this diffusible calcium is ionized is not definitely known. From the experiments of Neuhausen and Marshall,[15] it appears that only from 15 to 25 per cent is ionized. It becomes obvious that estimation of the total calcium is no criterion of the available calcium. However, Stewart [16] pertinently remarked:

The diffusible and especially the ionic calcium of the plasma is doubtless most readily available for transference to other tissues and is often referred to as the "active" or "available" calcium. In using these somewhat dangerous terms, however, two things must be borne in mind. In the first place, we really know nothing

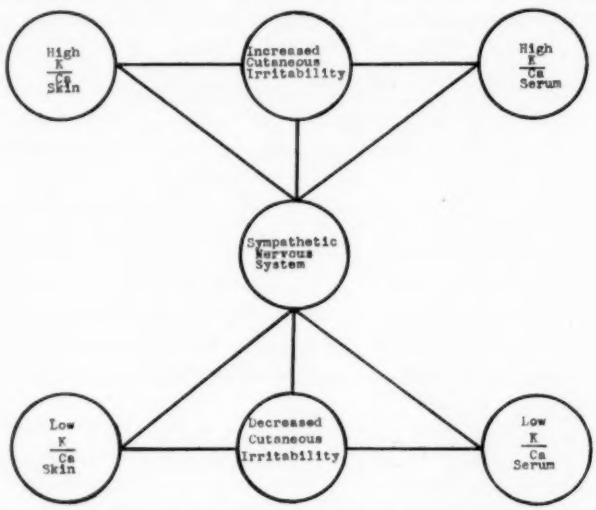

Chart 4.—Interrelation of potassium-calcium ratio in serum and in skin with the sympathetic nervous system and cutaneous irritability.

about the functions of the different calcium derivatives present in the blood and it is perfectly conceivable that the non-diffusible fraction may have its own special uses. Secondly, neither the absolute nor relative concentrations of the different calcium compounds can be regarded as fixed and immutable; they form a series of mutually depended equilibria, so that alteration in the concentration of one constituent may be followed by a readjustment throughout the whole complex system.

13. Rona, P., and Takahashi, D.: Ueber das Verhalten des Calcium im Serum und über den Gehalt der Blutkorperchen am Calcium, Biochem. Ztschr. **31**:336, 1911.

14. Cushny, A. R.: The Colloid-Free Filtrate of Serum, J. Physiol. **53**:391, 1919-1920.

15. Neuhausen, B. S., and Marshall, E. K.: An Electrochemical Study of the Condition of Several Electrolytes in the Blood, J. Biol. Chem. **53**:365, 1922.

16. Stewart, C. P.: The Biochemical Aspect of Calcium Therapy, Brit. M. J. **2**:782, 1927.

It is doubtful whether determination of the total serum calcium furnishes much of an index of ionic calcium metabolism of the tissues which is perhaps more intimately concerned in the pathogenesis of disease. Examination of the serum calcium alone presents but one view of a complex mechanism. Alteration in the ionic concentration of calcium and magnesium ions, on the one hand, and sodium and potassium ions, on the other, may disturb the reciprocal balance of these metals. It therefore appears that determination of total serum calcium is susceptible of only limited interpretation. This is apparently not recognized by some writers reporting studies of total serum calcium in various diseases. It is inferred that normal serum calcium excludes calcium as playing a rôle in the pathogenesis of the disease. The impression is furnished that with a normal blood calcium level, calcium therapy would probably be of no value. That this is not necessarily so is discussed by Lamson.[17] Studies of the inorganic constituents of the blood could more pertinently include the potassium-calcium ratio rather than calcium alone. Indeed, in at least one disease, rickets, it has been found that the calcium-phosphorus ratio is concerned in the pathogenesis.

In our studies (to be published) of the potassium-calcium ratio in patients with skin diseases, it was not uncommon to find total serum calcium within normal limits, yet the potassium-calcium ratio was abnormal. It is interesting to note that in this study a number of patients with disturbed ratio had symptoms of a sympathetic nerve unbalance. This is doubtless in line with the result of our studies herein reported.

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17. Lamson, Paul D.: Calcium Therapy in Atopy, Correspondence, J. A. M. A. **92**:1206 (April 6) 1929.

ERUPTION ON THE GENITALIA DUE TO A FUNGUS (MONILIA PINOYI—CASTELLANI) *

HENRY ODLAND, M.D.
AND
RACHEL E. HOFFSTADT, PH.D., D.SC.
Assistant Professor of Bacteriology, University of Washington
SEATTLE

This brief report was prompted by the observation and study of two unusual cases of a thrushlike eruption on the genitals, caused by a yeast-like fungus.

REPORT OF CASES

CASE 1.—A man, aged 34, married, a private patient, seen on July 5, 1928, complained of itching of the penis, which was of four days' duration. He further volunteered the fact that his wife had been troubled for several days with a severe itching in the genital region, and it was his belief that he had contracted an infection from her. On examination no abnormal symptoms were observed, except that on close inspection a thin, fairly adherent, scaling band was observed on the corona glandis. The scales appeared as a thin film on the surface and were grayish white. The involved area was thoroughly cleansed, and several scales were removed for microscopic examination and culture.

A few squamae were placed on a slide and treated with 20 per cent potassium hydroxide solution. On direct microscopic examination, mycelial threads and clusters of conidia were found in moderate numbers.

CASE 2.—The wife, aged 34, stated that she was otherwise in good general health and the mother of five children. She complained of a rather intense pruritus in the genital region, which had been of ten days' duration. On examination, a thrushlike eruption was observed on the surface of the labia minora and extending inwardly, where it involved the walls of the vagina. It consisted of fairly thick, membranous patches or plaques. The patches were irregular in size and shape, sharply marginated and pearly white. In places the edges were detached from the underlying epithelium. By gently scraping with a wooden spatula, the membranous plaques were readily removed, revealing a moist red surface. No lesions were observed in the mouth or elsewhere on the cutaneous surface. On direct examination of these tissue scrapings, numerous mycelial threads and yeast forms were found similar in all respects to the organism in case 1.

The treatment consisted of topical applications of gentian violet solution alternating with 10 per cent silver nitrate solution. This treatment effected a complete eradication of the condition.

Characteristics of the Organisms.—The scrapings from the skin of the penis and the mucous membrane of the vagina were planted on agar and incubated at 37 C. for twenty-four hours. For further study and identification the organism isolated was grown on the following mediums: gelatin, litmus milk, plain agar, dextrose peptone agar, maltose agar (Sabourauds), litmus lactose agar, glycerin peptone agar, lactose peptone agar, mannite peptone agar, Russell double sugar medium, potato, plain broth, 1 per cent mannite, levulose, lactose, salicin, dextrose,

* Submitted for publication, June 3, 1929.

maltose, galactose, adonite dextrin, sucrose and insulin broths. Duplicate cultures were made and incubated at 20 and 37 C. Microscopic examinations and cultural readings were made at the end of two days, and one, two, three and ten weeks.

Morphology: After twenty-four hours' growth on plain agar the organism was found to be a single-walled, solid-staining, oval, nonvacuolated yeast with a distinct nucleus. It measured 3 by 4 microns. At this time there was only a slight tendency to mycelial formation. The cells of the mycelium were from one-fourth to one-half times longer than the yeast cell and there were from three to four cells.

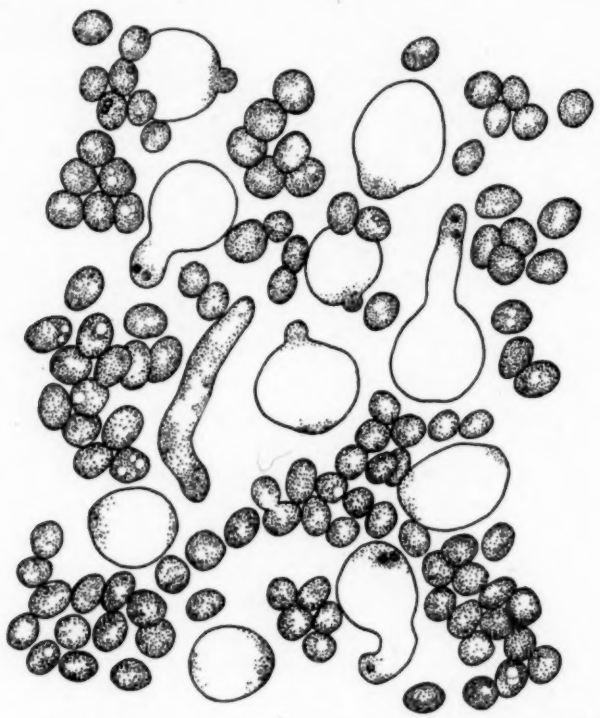

Fig. 1.—Monilia pinoyi, showing yeasts and blastospores; × 2,000.

After seven days on lactose, glycerin and mannite agars and potato the same form persisted. On maltose agar at room temperature the cells were highly vacuolated and chlamydospores were present. While on the same medium at incubator temperature extensive branched mycelial formations with terminal spores and conidia were observed. On dextrose agar the yeast forms were irregular and highly vacuolated and many blastospores were found. In all liquid mediums at both room and incubator temperature, only the yeast forms with a slight mycelial development were seen.

After fourteen days the early yeast forms remained dominant only on glycerin agar and in salicin broth. On all other solid and liquid mediums mycelial threads with spores were found in greater abundance than the yeast. The same was true after three weeks. After ten weeks all the cultures were full of disintegrated mycelial threads and spores without yeast forms.

Reproduction: Two types of reproduction were observed in the yeast stage of the organism: budding and blastospores. The former were found on all mediums, while the latter were seen most frequently on solid mediums, especially on lactose and maltose peptone agar (fig. 1).

In the mycelial stage the fungus (fig. 2) reproduced in three ways. Conidiaspores, forming in large groups at the septums of the mycelia, were in practically all mediums. Terminal sporulation and arthrospores were found only in solid mediums after three weeks and in liquid mediums after ten weeks. The spores of all types developed with the greatest frequency at incubator temperature.

Staining: Both the yeast and the mycelial stage of the fungus were gram-positive and not acid fast. They stained readily with any aniline stain.

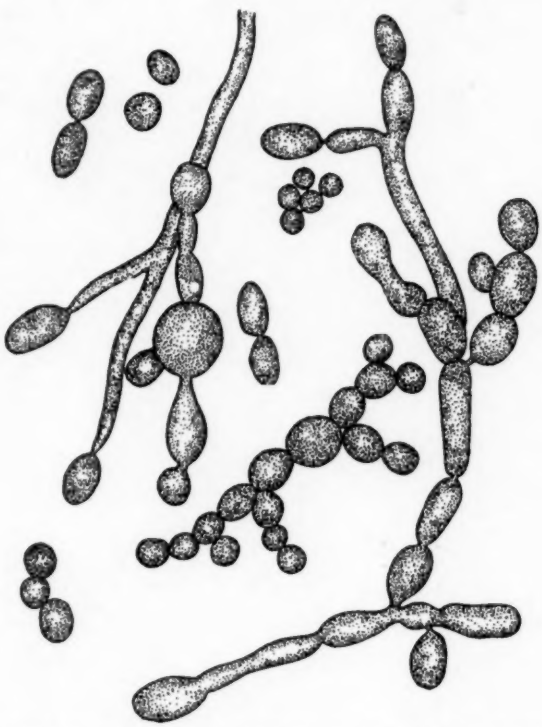

Fig. 2.—Monilia pinoyi, showing filaments with conidia and arthrospores; × 2,000.

Cultural Characteristics: On plain agar the growth was creamy white, smooth and abundant. The growth on dextrose agar, when young, was creamy white, but in ten week old cultures was brownish white along the midline. On glycerin, mannite, lactose and maltose peptone agars it grew less abundantly than on dextrose agar. After two weeks the margins were irregular and the center of the streak was elevated 0.5 mm. above the surface. On potato the growth was abundant, white and smooth. Litmus milk was rendered slightly alkaline after four weeks. Gelatin was not liquefied. Growth took place sparingly along the line of puncture.

Maltose, dextrose and levulose broths were fermented with the formation of moderate gas and acid, but mannite, salicin, galactose, adonite, dextrin and inulin

were not fermented. Broth, after twenty-four hours, was finely turbid, after which it cleared with the production of a heavy sediment. A collar on the side of the tube was formed in dextrose broth.

Animal Experimentation: A guinea-pig weighing 240 Gm. was inoculated intraperitoneally at two day intervals with 2 cc. of twenty-four hour broth cultures for two successive doses. No lesion developed at the point of inoculation. After three weeks the animal was killed and the autopsy observations were negative.

In its cultural characteristics, the organism agrees with that of *Monilia pinoyi* of Castellani,[1] with the exception of the fact that it renders milk alkaline after three weeks. The same type of organism has been reported by Castellani [2] in a case of vaginal moniliasis. He, however, found it associated with a purulent exudate.

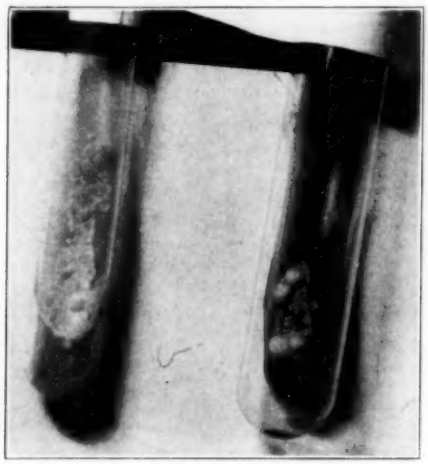

Fig. 3.—Original cultures, fourth week.

COMMENT

A noteworthy feature, particularly in the case of the woman, was the distinctly thrushlike character of the eruption. The sharply marginated, pearly white, thick, membranous plaques appeared at first glance to be "stuck on." Remarkable also were the large numbers of mycelial threads and conidia found on direct examination of the tissue. From the history and laboratory observations it would appear that there was a direct transmission of the disease from female to male. Bearing these features in mind it may be assumed, without further proof, that the organism isolated and identified as *Monilia pinoyi* was the etiologic agent in these cases.

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1. Castellani, Aldo: Blastomycosis and Other Conditions Due to Yeast-Like Fungi, Am. J. Trop. Med. **8**:379 (Sept.) 1928.

2. Castellani, A., and Taylor, F.: Brit. J. Obst. & Gynec. **32**:69, 1925.

SUPERFICIAL EPITHELIOMATOSIS *

HAMILTON MONTGOMERY, M.D.
ROCHESTER, MINN.

Under the title superficial epitheliomatosis [1] is included the clinical picture that has also been described under the terms erythematoid benign epithelioma,[2] multiple superficial basal cell epithelioma of the trunk, multiple superficial benign epithelioma of the skin,[3] carcinoid of the skin, Bowen type epithelioma, pagetoid epithelioma, carcinoma cutis multiformis and variations of these titles. The term superficial epitheliomatosis is chosen because I believe it is the most concise and accurate description that can be applied to the entity. The multiplicity of titles mentioned has caused confusion which has been increased by the failure of some authors to distinguish this disease from Bowen's precancerous dermatosis or from the extramammary type of Paget's disease.

It will be shown that superficial epitheliomatosis is frank basal cell, basal squamous cell or squamous cell epithelioma, occurring usually on the trunk. These epitheliomas will be distinguished from (1) certain benign types of dermatosis, (2) the more common epithelioma of the face and extremities, (3) superficial epithelioma secondary to keratosis, radiodermatitis or to the results of the administration of arsenic and (4) Bowen's disease and Paget's disease, including extramammary Paget's disease.

The study reported here was based on eighteen consecutive cases of superficial epitheliomatosis, including a case of intra-epidermal epithelioma.[4] In addition, and apart from the conditions just mentioned, studies were made of sections from six cases showing the microscopic features of Bowen's disease, several cases of Paget's disease of the nipple and numerous slides of keratoma senile (senile keratosis) and verruca senile (seborrheic keratosis). Epithelioma secondary to arsenic and radiodermatitis were excluded from the eighteen cases, as were also two cases of typical rodent ulcer occurring on the trunk which presented none of the features of superficial epitheliomatosis.

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* Submitted for publication, April 25, 1929.

* From the Section on Dermatology and Syphilology, the Mayo Clinic.

1. Ormsby, O. S.: A Practical Treatise on Diseases of the Skin, ed. 3, Philadelphia, Lea & Febiger, 1927, pp. 685 and 699.

2. Little, E. G. G.: Erythematoid Benign Epithelioma, Brit. J. Dermat. **35:** 435, 1923.

3. Wise, Fred: Multiple Superficial Benign Epithelioma of the Skin, Arch. Dermat. & Syph. **19:**1 (Jan.) 1929.

4. Jadassohn, J.: Demonstration von selteneren Hautepitheliomen, Beitr. z. klin. Chir. **136:**345, 1926.

CLINICAL DESCRIPTION AND COURSE

Superficial epitheliomatosis occurs usually on the trunk and upper portions of the arms and legs. The lesions may be single, but more often they are numerous, as many as 200 occurring on one person. They may be divided roughly into two groups:[5] (1) the dry scaly erythematous plaques which microscopically are usually basal cell epithelioma,

Fig. 1 (case 1).—Superficial epitheliomatosis. A typical erythematoid plaque with a rolled, threadlike, elevated border is shown.

and (2) the moist, crusted, eczematoid lesions which microscopically are usually squamous cell epithelioma of varying degrees of malignancy.

The dry type of lesion (fig. 1) is a superficial, erythematous, scaling plaque, with a sharply defined, slightly elevated, rolled, threadlike border, and with a tendency toward central involution. The border is diag-

5. Ormsby, O. S.: Personal communication to the author.

nostic. It simulates the border of a rodent ulcer but on a much more minute scale. There is relative lack of induration. The lesions may vary greatly in size, from a few millimeters to 25 cm. or more in diameter. The outline of a plaque is usually oval or circinate, although at times an arciform configuration is seen. Sometimes a plaque may not show central involution but may be covered with a fine, dry, branlike scale, simulating closely a patch of psoriasis (fig. 2). As the lesions progress in size and number, small crusted areas appear in the plaque, usually in association with minute, pearly bodies. Occasionally, a fungating

Fig. 2 (case 1).—*a*, a psoriasiform plaque; *b*, crusted eczematoid lesion; *c*, waxy, pearl-like papules of Little.

squamous cell epithelioma may develop in the center of a plaque, resulting eventually in metastasis and death.[6]

The moist types of lesions may be divided into two groups: (1) those which resemble Paget's disease of the nipple, and (2) those which resemble a patch of eczematoid dermatitis. They are relatively infrequent as compared with the dry type. The diagnostic, rolled, threadlike border is usually lacking.

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6. Finnerud, in discussion of Oliver and Finnerud: Epithelioma, Paget's Type (?), Arch. Dermat. & Syph. **17**:428 (March) 1928. Ormsby, O. S.: Discussion, Arch. Dermat. & Syph. **13**:687 (May) 1926. Ormsby and Mitchell: Multiple Superficial Epithelioma, Arch. Dermat. & Syph. **12**:144 (July) 1925.

Little [2] found that superficial epitheliomatosis frequently starts in the second and third decades of life and that the average age of onset is 40 years. It is not uncommon to obtain a history of ten, twenty, thirty and rarely even fifty years' duration, with only a gradual increase in size and number of the lesions during that time. One can understand, therefore, why Little, and later Wise,[3] used the word benign as applied to this condition.

DATA ON THE SERIES OF EIGHTEEN CASES OF SUPERFICIAL EPITHELIOMATOSIS

The average age of onset in the series was 40 years, the oldest patient being 60, and the youngest, 28. The average duration of the disease at the time of examination was thirteen years; the longest was thirty years and the shortest, one year. The latter occurred in the case of a patient, aged 35, who had three lesions. Ten of the cases were in women and eight in men. All of the patients had one or more lesions on the trunk; this was the predominant site. None had any lesions of superficial epitheliomatosis below the elbows or knees, or on the face. In eight cases there was only a single lesion at the time of examination. The lesions varied from 1 to 12 cm. in diameter. The predominant lesion was an erythematous, scaling plaque with a threadlike, elevated border. This border could be found in one or more portions of all the dry types of lesions, but it was absent in the moist types. The latter developed only later in life and were relatively uncommon. Four of the eleven patients presented the satellite, waxlike, pearly papules described by Little as the precursor lesions. Dermatoses seen in association with the eighteen cases occurred as follows: senile keratosis in four cases; squamous cell epithelioma with associated radium dermatitis on the index finger in one case; seborrheic keratosis [7] (verruca senilis) in many cases; basal cell epithelioma (rodent ulcer) of the face in three cases; basal squamous cell epithelioma of the outer canthus of the eye in one case; a hyperkeratotic nevus of the hand in one case, and ordinary benign pigmented nevi in many cases. In five of the eighteen cases in which there was associated epithelioma, none was of the superficial morphea-like type. Psoriasis, seborrheic dermatitis, acne rosacea and latent syphilis, respectively, were found in one case each. In the case of psoriasis, a relationship of the psoriasis to the superficial epitheliomatosis was not apparent.

Microscopic studies were made in sixteen of the eighteen cases. Microscopically, in all sixteen cases, one or more of the lesions were

7. Walter Freudenthal has given criteria for clinical and microscopic differentiation of seborrheic and senile keratosis (Verruca senilis und Keratoma senile, Arch. f. Dermat. u. Syph. **152**:505, 1926).

those of basal cell epithelioma. In five cases there were transitional forms (basal squamous cell epithelioma), and in three cases there were squamous cell epitheliomas. The failure to demonstrate epithelioma unless the correct area of a plaque is taken for biopsy was shown in one case in which a single plaque was excised. In only two of five sections from different portions of the plaque could an epithelioma be demonstrated microscopically. Treatment had been given prior to observation at the clinic as follows: ultraviolet light, two cases; carbon dioxide snow, two cases; roentgen ray or radium, five cases, and plasters, two cases. In all of these cases there had been a recurrence of the lesion at the site treated. After from one to three years' observation there had not been recurrence in any of the cases following surgical excision. In the accompanying tabulation is shown the difference, clinically, between my series of cases of superficial epitheliomatosis and two other series of cases of the more common epitheliomas of the skin. One of these two

Clinical Comparison of Superficial Epitheliomatosis and the More Common Epithelioma

	Growths which Were Above Clavicle, Per Cent	Average Age at Onset, Years	Average Duration, Years
Basal cell epithelioma (Broders' series)	96	56.7	7.5
Squamous cell epithelioma (Broders' series)	78	59.34	4.8
Superficial epitheliomatosis (this series)	0 *	40.0	13.0

* Frank epithelioma was associated in 22 per cent.

series is represented by Broders' 268 cases of basal cell epithelioma;[8] the other by Broders' series of 256 cases of squamous cell epithelioma.[9]

A report of one of the eighteen cases in my series is given in detail because of its typical features.

CASE 1.—A woman, aged 56, came to the clinic because of three lesions on the trunk. General examination gave essentially negative results. About fifteen years previously, a white "spot" about 2.5 cm. in diameter had appeared on the left breast just above the nipple. This had become red and scaling, and later small crusts had appeared in places. Occasionally, there had been slight itching. The lesion grew slowly by peripheral extension; it had grown more rapidly during the last two years. Figure 1 shows the appearance of the lesion when seen in the clinic, a typical lesion of the erythematoid plaque type. About five years before her visit to the clinic two other lesions had appeared, one (fig. 2, *a*) over the sacrum and resembling a patch of psoriasis, the other (fig. 2, *b*) an eczematoid, crusted lesion. These also had increased slowly in size without giving rise to symptoms. For a number of years the patient had noticed the appearance of small

8. Broders, A. C.: Basal-Cell Epithelioma, J. A. M. A. **72**:856 (March 22) 1919.

9. Broders, A. C.: Squamous-Cell Epithelioma of the Skin, Ann. Surg. **73**:141, 1921.

discrete papules (fig. 2, *c*), from 1 to 3 mm. in diameter, on the skin over the chest, abdomen, arms, chin, face and neck. Most of them were the color of the skin but some had a lighter, waxy hue. There was no evidence of metastasis. Prior to the patient's visit to the clinic, local application of salves and thirteen treatments with ultraviolet light had been given. The roentgen rays, radium, caustic pastes or arsenic had not been used therapeutically.

All three lesions, and also one of the small papules, were excised. Numerous sections were made from various portions of each lesion. Microscopically, the erythematoid plaque (fig. 1) was a typical basal cell epithelioma (fig. 3). In contrast, the microscopic picture of the lesion designated as *a* in figure 2 (the psoriasiform plaque) showed both basal cell epithelioma and basal squamous cell

Fig. 3 (case 1).—Basal cell epithelioma; × 115.

epithelioma. The sections taken from the eczematoid lesion (fig. 2, *b*) were all frank squamous cell epithelioma (fig. 4). Sections made of one of the waxy, pearly papules (fig. 2, *c*) disclosed only dense fibrous hyperplasia. Serial sections did not give evidence of malignancy. In this case, therefore, examples of basal cell, basal squamous cell and squamous cell epithelioma are shown occurring in separate lesions in the same patient; the latter two types were represented in the more recent lesions.

MICROSCOPIC DESCRIPTION AND COMMENT

The microscopic picture of superficial epitheliomatosis may be basal cell, basal squamous cell or squamous cell epithelioma. Practically all the tumors, however, were superficial and rarely extended to the level

of the sweat glands. Multiple points of origin from the epidermis were readily demonstrated in the earliest stages, in which there could be no question of either an anlage which had united secondarily with the epidermis, or a primary focus which had united secondarily with the epidermis through branching processes. In most instances, the origin in the basal cell epithelioma could be traced in serial sections from the basal cells of the epidermis. Origin from the basal cells of the outer walls of a hair follicle was seen in a few sections. The change from normal epidermis to a region of basal epithelioma was abrupt. Transi-

Fig. 4 (case 1).—Squamous cell epithelioma, graded 3; the lack of pearl formation may be noted; × 100.

tional stages were not seen. None of the sections showed any of the microscopic changes of senile keratosis, Bowen's disease or Paget's disease.

The basal cell epithelioma grew into the cutis either in solid masses or as a netlike arrangement of anastomosing strands of tumor cells. There was usually a definite fibrous capsule about the growths. Ulceration of the epidermis occurred in some cases over an area of basal cell growth, and at others, as the result of an inflammatory reaction in the upper layers of cutis, usually adjacent to a tumor. A lymphocytic and

plasma cell infiltrate, varying greatly in amount, was seen in the upper layers of cutis and about the tumor cells. The elastic fibers and gitterfasern (lattice fibers) stopped abruptly at the margin of the tumors.

In several cases, as shown by staining with silver nitrate, a varying amount of melanin pigment was found in the basal cells of the epidermis, in dendritic cells about the tumor and rarely in the tumor cells. In addition, there was a varying number of chromatophores laden with pigment limited to the papillary bodies.

The cases in which there was transitional or basal squamous cell epithelioma differed from those which I described in a previous paper [10] only in that they were more superficial and the partial pearl formation, with colloidal center, was much smaller and not as prominent.

One of the three cases of squamous cell epithelioma in this series was a typical epithelioma, graded 2 by Broders' classification, with marked pearl formation. In case 1 (fig. 4), on the other hand, there were strands of prickle cells arising from multiple points of origin from the epidermis and with practically no attempt at pearl formation. The individual cells, however, were fairly well differentiated and there were few mitotic figures. The gitterfasern merged with the tumor cells. The third case was that of an intra-epidermal epithelioma.

I wish to call attention at this point to Ormsby's [11] case of superficial epitheliomatosis which terminated in metastasis and death. I was able to study sections from this case through the courtesy of Dr. Ormsby and Dr. Finnerud.[12] Sections from the margin of the large plaque, from the vegetating lesion in the center and from the gland to which there was metastasis show a similar microscopic picture. The structure is that of a squamous cell epithelioma, graded 3, in which there is practically no pearl formation; instead, there is marked individual cell keratinization in places, amitotic cell division with the formation of giant epithelial cells in others, and the phenomenon of "clumping" emphasized by Bowen [13] as one of the outstanding features of the disease that bears his name. Whereas in Finnerud's figure 292, the microscopic picture simulates that of Bowen's disease, the basal cell layer has been destroyed and the picture is definitely that of an epithelioma. In my experience, this microscopic picture is not uncommon for squamous cell epithelioma and must be distinguished from Bowen's disease, on the one hand, and from extramammary Paget's disease on the other.

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10. Montgomery, Hamilton: Basal Squamous Cell Epithelioma, Arch. Dermat. & Syph. **18**:50 (July) 1928.

11. Oliver and Finnerud (footnote 6, first reference). Ormsby (footnotes 1 and 6, second reference). Ormsby and Mitchell (footnote 6, third reference).

12. Ormsby (footnote 1, figures 292, 293 and 294).

13. Bowen, J. T.: Precancerous Dermatoses: A Study of Two Cases of Chronic Atypical Epithelial Proliferation, J. Cutan. Dis. **30**:241, 1912.

INTRA-EPIDERMAL EPITHELIOMA (BORST AND JADASSOHN)

Borst,[14] in the report of a case, first described the intra-epidermal growth of an epithelioma; he believed that the tumor cells had spread out into the epidermis from a unicentric origin. It remained, however, for Jadassohn [4] to call attention clearly to this rare microscopic picture together with illustrations of the microscopic appearance in two cases; one was a basal cell growth and in the other were both basal cell and squamous cell growths. Jadassohn emphasized the multicentric origin of the growths in his cases. He mentioned a fourth case reported from his clinic by Rose, in which the intra-epidermal growth was in a hair follicle.

To these four cases I wish to add a fifth, which I have included in the group of superficial epitheliomatosis because clinically it belongs there; microscopically, it was almost a duplicate of Jadassohn's second case.

CASE 2.—A married woman, aged 59, came to the Mayo Clinic in November, 1926, because of a lesion on the right breast of thirty years' duration. The lesion had started "like a mole" and had remained the same size for eight years; then it had grown slowly until it had become about 4 cm. in diameter. At no time had there been any oozing or weeping. No treatment had been used. Thyroidectomy for multiple fetal and colloid adenomas had been performed a year previous to examination.

General examination gave negative results. On dermatologic examination there was a sharply defined, superficial, irregularly shaped, scaling plaque 4 cm. in diameter on the breast, not involving the nipple. The borders were sharply demarcated from the surrounding skin, from which they were elevated from 0.25 to 0.5 cm. Definite, brownish-black pigmentation was seen in a small portion of the border. Only the borders gave any sense of induration to touch. In the center of the plaque was a slight amount of atrophy. There were a few tiny crusts, the removal of which revealed a granular, oozing, papillomatous base. Palpable axillary or cervical lymph nodes were not present. Simple amputation of the breast was done, and because of the proximity of the lesion to the nipple, treatment by the roentgen rays was given to the area of the breast and to the cervical region. The treatment consisted of 135 kilovolts, 16 inches (40.64 cm.) distance, 5 milliamperes, for eighteen minutes, with 4 mm. of aluminum filter. The patient reported that recurrence had not occurred two years after the operation.

Serial sections were made from four different portions of the plaque. They all showed essentially the same picture as that portrayed in figures 5 and 6. In all the sections there was an intra-epidermal epithelioma; in places it was basal cell in type, in others, frankly squamous cell. Serial sections definitely proved that the growths were intra-epidermal and of multicentric origin. The basal cell growths showed multiple points of origin from the basal cells of the epidermis but, unlike the

14. Borst: Ueber die Möglichkeit einer ausgedehnten intraepidermalen Verbreitund des Hautkrebses, Verhandl. d. deutsch. path. Gesellsch. **7**:118, 1904.

ordinary basal cell epithelioma, they were growing upward into the epidermis rather than downward into the cutis.

In the portions of the plaque in which clinically there was evidence of ulceration, microscopic examination disclosed a more papillomatous type of growth. Even here the tumor did not invade the cutis, but the growths had extended upward, causing destruction of the stratum corneum. They were covered with a serosanguineous crust in these areas (similar to those in Jadassohn's figure 6). The basal cell layer of the epidermis was intact throughout the sections. The transition from normal epidermis to that containing epithelioma was abrupt (fig. 6). Where

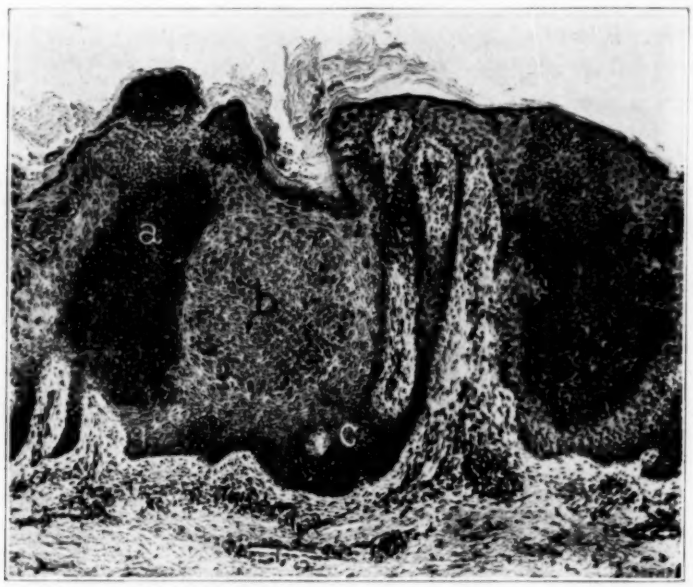

Fig. 5 (case 2).—Intra-epidermal epithelioma; *a*, basal cell epithelioma arising from the basal cells of the epidermis; *b*, squamous cell epithelioma; *c*, acanthosis of the epidermis, and preservation of basal cell layer; × 50.

the intra-epidermal epithelioma began, the rete ridges were widened; in one such place a basal cell growth occupied most of the rete ridge, and in others a squamous cell growth. The latter appeared as a collection of tumor cells in the center of the rete ridge, apparently arising from altered prickle cells near the basal cell layer, in places showing a definite tendency to pearl formation, and in others individual cell keratinization. Some of the rete ridges, however, contained both basal cell and squamous cell growths. There were two possible interpretations concerning these areas, about which it was impossible to be certain, even after examination of serial sections. The two growths might be arising independently; on the other hand, one might be arising from the other,

a basal squamous cell epithelioma. Jadassohn mentioned encountering the same difficulty. Mitotic figures were present in both types of growths, but were not numerous.

On microscopic examination, increased pigmentation was found only in the small region in which it was seen clinically. In that part of the region of pigmentation which was within the area of normal epidermis, the increase in melanin was within the basal cells; in that part which was within the area of the tumor, the increase in melanin was found in dendritic cells that were interspersed between the tumor cells. In most of the sections, however, there was a complete absence of melanin pig-

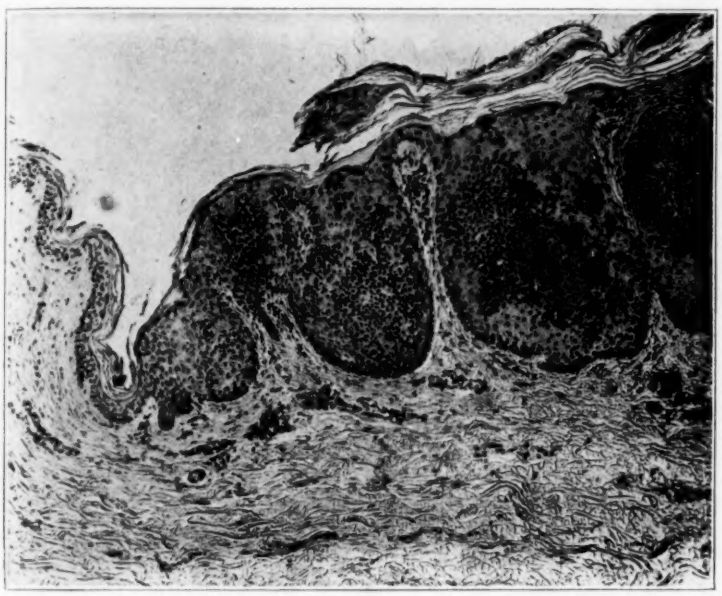

Fig. 6 (case 2).—Intra-epidermal epithelioma. The abrupt change from normal epidermis to the tumor growth is shown, with sparse infiltration in the upper cutis.

mentation where the tumors were growing and also in the adjacent epidermis. An infiltrate composed of lymphocytes and plasma cells, with an occasional mast cell, was seen in the upper cutis, beneath the tumor. It varied greatly in amount and was absent at the borders. The elastic tissue was frayed and splintered where the infiltrate occurred. The gitterfasern appeared normal and did not show any tendency to invade the epidermis or the tumor. There was a moderate degree of homogenization of the connective tissue in the upper cutis.

Beneath the areas of epithelioma the sweat glands appeared to be relatively normal, but sweat ducts could not be traced through the tumors. There were remnants of sebaceous glands. An intra-epidermal

growth from a hair follicle, such as Jadassohn mentioned having seen, was not demonstrable. There were a few small, cornified cysts in the tumor masses which could not be traced to either sebaceous glands or hair follicles.

From careful study in this case I obtained a definite impression that the primary changes had taken place in the epidermis and not in the cutis. The tumor cells were typical for those of basal cell and prickle cell epithelioma, respectively. The whole microscopic picture contained nothing to suggest the appearance of nevus epithelioma cylindromatosus (a term used in Germany) or that of benign epithelial neoplasms, such as tricho-epithelioma or epithelioma adenoides cysticum. Recently, Bowen's disease has been spoken of by Fraser [15] as an intra-epidermal epithelioma. He agreed [16] with me entirely, however, that in the case just reviewed, the microscopic picture is distinct and separate and is not to be confused with that of Bowen's disease. The clinical appearance of the lesion, together with its proximity to the nipple and areola, suggested the possibility of extramammary Paget's disease. None of the sections from the plaque showed any Paget cells. Sections taken from the nipple, areola and other portions of the breast did not give evidence of malignancy or Paget's disease.

The clinical description and the site of the lesion meet all the requirements for a diagnosis of superficial epitheliomatosis. Jadassohn's cases, from the clinical standpoint, readily fall into this group. In Borst's case, on the other hand, the growth occurred on the lip. Sufficient details are not given in his description to permit a classification on clinical grounds. Rather than create a separate entity, therefore, this case is included in the class of superficial epitheliomatosis, perhaps as a subgroup because of the bizarre and rare microscopic picture. Intra-epidermal epithelioma must be regarded as a true malignant condition, but because of its limitation within the epidermis, as one of a relatively benign character, with a good prognosis if the growth is completely removed.

DIFFERENTIAL DIAGNOSIS

Superficial epitheliomatosis frequently has been mistaken for a patch of psoriasis. The characteristic rolled, threadlike, elevated border serves to distinguish such a patch from a psoriatic lesion. There are several cases in the literature, and one case in this series, in which psoriasis was found in association with this condition. Only one case is reported [17]

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15. Fraser, J. F.: Bowen's Disease and Paget's Disease of the Nipple: Their Relation to Dyskeratosis, Arch. Dermat. & Syph. **18**:809 (Dec.) 1928.

16. Fraser, J. F.: Personal communication to the author.

17. Pringle, J. J., in discussion before Royal Society of Medicine, Section on Dermatology, Brit. J. Dermat. **34**:247, 1922.

in which superficial epitheliomatosis has arisen in a patch of psoriasis. This occurred in a man, aged 83, who had received treatment with the roentgen rays and radium. The epithelioma, therefore, may have been the result of treatment. Superficial epithelioma secondary to treatment with arsenic, for psoriasis, also must be ruled out.

At times lupus erythematosus and superficial types of nodulo-ulcerative syphilis have been confused with the dry types of superficial epitheliomatosis, and patches of eczema and tinea circinata, with the moist type of lesions.

The differentiation of superficial epitheliomatosis and ordinary basal cell and squamous cell epithelioma is based on the facts that superficial epitheliomatosis is superficial, that the lesions occur predominantly on the trunk and that the disease runs a relatively benign course. Even the superficial, cicatrizing, morphea-like, basal cell epithelioma of the face usually presents a greater degree of induration than that of superficial epitheliomatosis and lacks the rolled, threadlike, elevated border. In this series none of the associated epitheliomas of the face and extremities was of this superficial morphea type.

The superficial type of squamous cell epithelioma occurring on the face and simulating a seborrheic dermatitis may be distinguished from superficial epitheliomatosis by its lack of definite boundaries, its apparent origin from multiple areas of senile keratosis and its rapid and usually fatal course. Superficial epithelioma of the penis, perineal region and scrotum, including so-called cases of extramammary Paget's disease, were not seen in this series or in Little's. They are definitely indurated lesions of a highly malignant character and do not belong in the group reported here.

Epithelioma secondary to other causes, such as arsenic, radiodermatitis or xeroderma pigmentosa, is readily distinguished from superficial epitheliomatosis by the concomitant features.

BOWEN'S DISEASE

It is necessary to discuss Bowen's precancerous dermatosis and to distinguish it from superficial epitheliomatosis for the following reasons. The two conditions have been found in the same patient. Bowen's third case [18] and Fraser's [15] case 2 are examples of this. The Italian literature has failed to distinguish between the two conditions. In this country, Morrow and Lee's [19] cases of the Bowen type of epithelioma fulfil all the clinical and microscopic requirements of superficial

18. Bowen, J. T.: Precancerous Dermatoses: A Sixth Case of a Type Recently Described, J. Cutan. Dis. **33**:787, 1915.

19. Morrow, Howard, and Lee, A. W.: Two Cases of the Bowen Type of Epithelioma, J. Cutan. Dis. **36**:1, 1918.

epitheliomatosis and do not correspond to the cases described by Bowen [13] and Darier [20] as Bowen's disease. Finally, there are lesions classified as Bowen's disease or Bowen epithelioma which, on microscopic examination, are found to be frank squamous cell epithelioma showing individual cell keratinization. Darier's third case is an example of this.

Bowen's disease may be divided clinically into two types: (1) the type of Bowen's original two cases in each of which was a solitary lesion composed of lenticular papules and which resembed a noldulo-ulcerative syphiloderm, and (2) multiple, nonelevated, scaly or crusted plaques as described by Darier, and recently by Fraser [15] and Wise. The lesions of Bowen's disease may remain as such for many years or they may develop into squamous cell epithelioma with metastasis, and death may result. The microscopic picture is that of hyperkeratosis and acanthosis of the epidermis, together with a plasma cell and lymphocytic infiltrate in the upper cutis. The characteristic changes are seen in the epidermis. These consist in disturbance of the individual growth of the prickle cells, so that the cells are distorted; amitotic cell division with "clumping" of the nuclei occurs, and individual cell keratinization, with the formation of giant epithelial cells, are seen. Marked vacuolization of some of the cells occurs, so that they may simulate the Paget cells of Paget's disease. The intercellular bridges, however, are preserved, in contrast with true Paget cells in which they are absent. In Bowen's original cases, the basal cell layer was intact throughout the sections.

Sections were studied from six cases which showed the microscopic picture of Bowen's disease as already described. Among these cases were included Fraser's two cases, an unpublished case of H. E. Michelson (through his courtesy) and three cases that had been seen at the Mayo Clinic. One of the latter cases was that of a woman, aged 56, who presented a small, scaling, pigmented papule on the inner aspect of the leg, of six years' duration. The second case was that of a woman, aged 54, who presented a lesion on the abdomen, of eighteen years' duration. This was a superficial, sharply defined, oval plaque, 2 cm. in diameter, with ulceration and little induration. The clinical diagnosis was that of superficial epithelioma. Clinically, both these cases might be regarded as atypical forms of Bowen's disease; clinically, the third case was one of typical senile keratosis occurring on the buttock. The microscopic picture is shown in figure 7.

The microscopic picture of Bowen's disease, therefore, cannot be regarded as an entity because it can be simulated by senile keratosis. Freudenthal has also shown this fact, and Jadassohn has demonstrated the microscopic changes of Bowen's disease in an early roentgen car-

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20. Darier, J.: La dermatose précancéreuse de Bowen dyskératose lenticulaire et en disques, Ann. de dermat. et syph. **45**:449, 1914-1915.

cinoma and in experimental tar cancer in animals. Bowen's disease also must be distinguished from a squamous cell epithelioma, showing individual cell keratinization occurring in situ (fig. 8). The differentiation of superficial epitheliomatosis and the multiple, scaly plaque type of Bowen's disease may require biopsy. Microscopic changes suggesting the latter disease were not seen in this series of cases of superficial epitheliomatosis. Fraser, in his case 2 of Bowen's disease, reported an associated lesion of superficial epitheliomatosis occurring on the breast, in which the microscopic diagnosis was that of basal cell epithelioma. There were no microscopic changes suggestive of Bowen's disease in

Fig. 7.—Keratosis senilis, presenting all the microscopic features of Bowen's disease. The basal cell layer is intact; × 75.

this lesion. Finally, Bowen's disease is not to be confused with the intra-epidermal epithelioma of Jadassohn.

I believe that Bowen's precancerous dermatosis is a definite entity if the term is limited to lesions which fulfil the clinical picture as described by Bowen and Darier and which microscopically show the phenomenon described by Bowen, with an intact basal cell layer. When the basal cell layer is broken, the lesion must be regarded as a squamous cell epithelioma. I should retain the term precancerous dermatosis of Bowen in the restricted sense just mentioned, because of the ability of senile keratosis to present the same microscopic picture and because both conditions may remain as such for long periods or may eventually

lead to squamous cell epithelioma. The similarity of the microscopic picture of the two conditions suggests a relationship between the two which is worthy of further study.

PAGET'S DISEASE

On clinical grounds alone, one cannot distinguish the moist types of superficial epitheliomatosis from extramammary Paget's disease. Also,

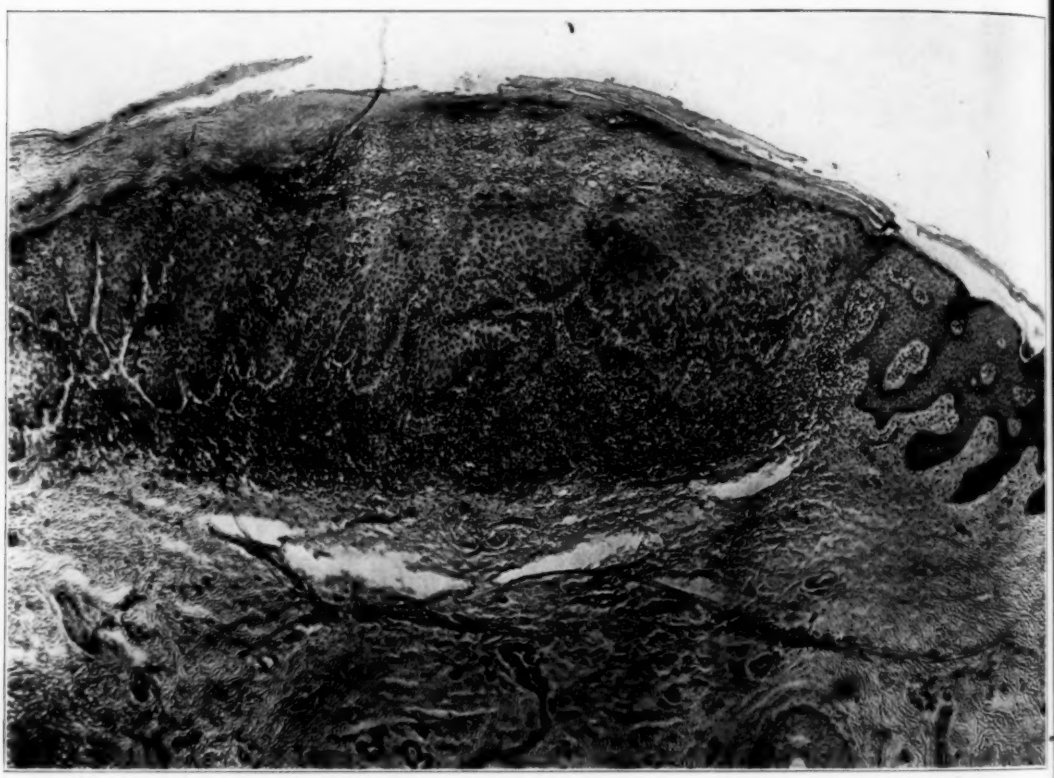

Fig. 8.—Squamous cell epithelioma in situ, graded 2, from the sole of the foot. The growth does not extend below the level of the adjacent rete pegs. There is an abrupt change from normal epidermis to tumor cells. Also there are dyskeratotic cells in the epidermis. The basal cell layer is destroyed; × 10. (Courtesy of Dr. Henry E. Michelson.)

Paget's disease of the nipple, clinically diagnosed as such, on microscopic examination may prove to be one of four other conditions: (1) eczema; (2) epithelioma; the epithelioma in these cases may be either basal cell or squamous cell presenting individual cell keratinization simulating Paget cells, but still showing intercellular bridges; (3) metastatic adenocarcinoma, or (4) true Paget's disease. The latter condition is char-

acterized by the Paget cells, concerning the morphology of which there is uniform agreement by the leading investigators of the subject. The origin of the Paget cells, however, and therefore of Paget's disease, has been the subject recently of a great deal of discussion. Darier believed that Paget's disease is a precancerous condition and that the Paget cells are altered epidermal cells. Other investigators believe that the condition is a carcinoma arising from the lacteal ducts and that the Paget cells are tumor cells that have invaded the epidermis. Finally, there are those who believe that Paget's disease is an epithelioma, with multicentric origin, of the Paget cells from the epidermis, lacteal ducts and hair follicles. Fraser [15] recently reviewed these data. In an unpublished series of sixteen cases of Paget's disease of the nipple, studied at the Mayo Clinic, Yoakem [21] found underlying adenocarcinoma of the breast in 75 per cent. No connection could be traced between the two associated conditions. From the clinical standpoint, there is uniform agreement that simple or radical amputation of the breast should be done in all cases of true Paget's disease.

From an analysis of the microscopic data in cases reported as extramammary Paget's disease, I have arrived at the following conclusions: (1) most of the cases reported, especially those of the scrotum, penis and perineum, histologically were frank squamous cell epithelioma showing individual cell keratinization, and (2) cases reported in which the lesions have been found on other parts of the body histologically have been basal cell epithelioma, Bowen's disease or metastatic carcinoma. I believe that if there is such a thing as extramammary Paget's disease it is of rare occurrence.

Darier has clearly differentiated the microscopic picture of Bowen's disease and of Paget's disease. In Bowen's disease there are no Paget cells and the intercellular bridges of the altered prickle cells are preserved. Superficial epitheliomatosis has nothing in common with the microscopic picture of Paget's disease. The term pagetoid epithelioma, therefore, as applied to the former only causes confusion.

ETIOLOGY OF SUPERFICIAL EPITHELIOMATOSIS

Little believed that the primary lesion in superficial epitheliomatosis was the small, waxy, pearl-like papule or nodule, the size of a pea, which he found associated in his cases. These nodules occurred in only four of eleven cases of this series. Biopsy of one nodule showed only fibrosis. This question, however, should be studied further in other cases. I do not believe that superficial epitheliomatosis is related to the so-called

21. Yoakem, H. H.: Paget's Disease of the Nipple and Areola, unpublished data.

epithelial nevi of the skin (benign epithelioma), such as tricho-epithelioma, epithelioma adenoides cysticum or nevus epithelioma cylindromatosus, as the condition has nothing in common with these disorders either clinically or microscopically. Seborrheic and senile keratosis, I believe, occur merely as lesions associated with superficial epitheliomatosis. This probably also holds true for Bowen's precancerous dermatosis and for psoriasis. The lesions of superficial epitheliomatosis as a rule do not occur at sites of trauma. The influence of light and exposure to the elements is ruled out by the situation of the plaques on the covered portions of the body. The tendency toward multiplicity of lesions suggests an inherited predisposition or some peculiarity of the soil in these persons. This soil, however, is rather highly resistant to malignant growths; microscopic examination reveals marked inflammatory reaction in many cases, and at times this may invade the masses and destroy them. Moreover, clinically the lesions are of relatively slow growth, and at times there is spontaneous involution of one or more plaques. Superficial epitheliomatosis, I believe, offers an ideal field for further microscopic and physicochemical research in regard to the etiology of malignant neoplasms of the skin.

JUSTIFICATION FOR THE USE OF THE TERM SUPERFICIAL EPITHELIOMATOSIS

It has been shown that the condition described is histologically frank epithelioma, usually basal cell, but that squamous cell epithelioma with metastasis may arise. The term "benign," therefore, should not be used without qualification, nor can all of these lesions be designated as basal cell epithelioma. In the beginning the lesions are superficial. The term epitheliomatosis is used because of the clinical resemblance of the lesions to several of the nonmalignant types of dermatoses of the skin. The terms "Bowen type" and "pagetoid epithelioma" serve only to create confusion. "Multiple" is left out of the title because many cases, at least in their incipiency, present single lesions.

TREATMENT AND PROGNOSIS

As pointed out earlier in this paper, the lesions of superficial epitheliomatosis are relatively resistant to treatment with the roentgen rays, radium and carbon dioxide snow. Excision seems to be the most satisfactory form of treatment. The chances of cure, if the conditions are treated before the terminal fungating stage, with metastasis are excellent. Although frankly epithelioma of the skin, the course of the disease is usually relatively benign as compared with rodent ulcer.

SUMMARY AND CONCLUSIONS

1. Superficial epitheliomatosis is a primary epithelioma of the skin presenting a definite clinical picture and course which warrant its grouping under a separate heading.

2. The most characteristic lesion of the disease is a superficial erythematous scaling plaque, possessing a diagnostic, rolled, threadlike, elevated border.

3. The lesions are usually limited to the trunk, and may be single or multiple.

4. The earlier age of onset in life, the relatively long duration and the relatively benign character of the lesions warrant separating this condition from the usual epithelioma of the face and extremities.

5. Although usually running a relatively benign course, basal squamous or squamous cell epithelioma can develop, and finally metastasis and death can occur. The treatment of choice is surgical excision.

6. A case of intra-epidermal epithelioma (Borst and Jadassohn) is reported, and reasons for its inclusion with superficial epitheliomatosis are given. It is not to be confused with Bowen's disease.

7. The differential diagnosis, both clinically and microscopically, is discussed in detail, especially regarding Bowen's disease and Paget's disease.

8. Superficial epithelioma, secondary to other causes, such as arsenic and the roentgen rays, should not be confused with superficial epitheliomatosis.

9. Bowen's precancerous dermatosis should not be confused with superficial epitheliomatosis or squamous cell epithelioma, in which there is individual cell keratinization.

10. There is no apparent relationship between either Bowen's disease or extramammary Paget's disease and superficial epitheliomatosis.

THE BACTERIAL ETIOLOGY OF SEBORRHEA*

FRANCIS M. DUFFY, M.D.
Associate Professor of Bacteriology and Pathology, Creighton University School of Medicine
OMAHA

In looking over the field of research there does not seem to be a great amount of work reported on the cause of seborrhea. Various morphologic forms, from Sabouraud's "microbacillus" and Unna's "bottle bacillus" to cocci, such as morococci, diplococci and tetracocci, have been found and studied. Of all the various organisms demonstrated, the coccus forms seem to appear more commonly associated with seborrhea than any of the others. The reports show that these are all forms, from oval to spherical, arranged as diplococci and tetracocci. They seem to occupy a position somewhere between the kingdoms of bacteria and yeasts.

In 1894, Unna found masses of cocci in diplococcus and tetracoccus formation. He cultured these from the hairy scalp. Inoculating dogs with these organisms, he observed reddening of the skin and falling out of hair. He called the organisms morococci. The same experiments were performed with the various other associated organisms, but no pathogenic results were obtained. Merril [1] and others reported the presence of these cocci in the majority of their cases of seborrhea. Other organisms were found, but these coccus forms were more constantly present. Merril's cultural examination revealed the formation of colonies that were from white to golden yellow. Morphologically, they appear mostly in diplococcus arrangement. Inoculation of these organisms into animals resulted in typical spots of seborrhea.

EXPERIMENTAL INVESTIGATION

A special medium was prepared in the following manner: About 20 Gm. of human hair was boiled in 1 liter of water for one and one-half hours. This was filtered and 1 per cent peptone, 0.5 per cent sodium chloride and 3 per cent agar were added to the water. The medium was titrated to p_H 7.6. It was then tubed and sterilized in an autoclave at a pressure of 15 pounds (6.8 Kg.) for fifteen minutes. A tube of the melted medium was cooled to about 40 C.; to it were added several flakes of seborrhea from the scalp of the patient. The mixture was agitated considerably and poured into dishes of petri. Cultures of the desquamations from twelve cases of dandruff were made.

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* Submitted for publication, March 6, 1929.

1. Merril, W. H.: The Diplococci Seborrhea, New York State J. Med. **66:** 490, 1897. Van Horn: Micro-Organism bij. Seborrhoe, Handel v.h. Nederl. Nat. en Geneesk Conj. Harlen, 1895, p. 494. Schamberg, J. F.: The Microbacillus of Seborrhea, J. Cutan. & Gen.-Urin. Dis. **20:**99, 1902.

At the end of twenty-four hours of incubation at 37.5 C., the plates were examined. There were colonies of *Staphylococcus aureus* and *albus* and bacilli. In each plate were scattered from three to five deep yellow colonies which were highly lustrous and moist and had the gross appearance of colonies of yeast. They were uniform in their growth and highly elevated above the surface of the medium.

These were examined microscopically and found to contain large gram-positive cocci, arranged in diplococcus and tetracoccus positions. They stained easily with the simple aqueous dyes. It was noted that the cocci varied in size within the same grouping. All, however, were considerably larger than staphylococci. They ranged in diameter from 1 to 3 microns.

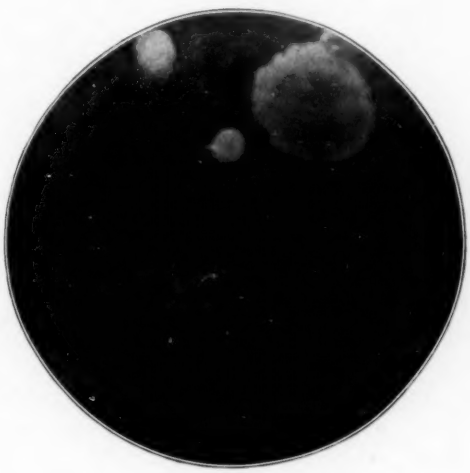

Fig. 1.—A culture of the organism in seborrhea in colony formation, four months old.

These colonies were obtained in pure culture. Pathogenic experiments were performed on five rabbits and on two guinea-pigs. Inoculation was made by a cutaneous method which consisted of clipping the hair, rubbing the area until it was hyperemic and applying a suspension of the organism. The animals were kept under observation.

About three weeks after inoculation, all five of the rabbits began to develop typical seborrhea-like scales around the base of the hairs. Two rabbits showed abraded areas where they had apparently scratched themselves. From all of these cases, after two or three attempts to obtain cultures from the desquamations on the hair-agar medium, the original organism was isolated and demonstrated to be morphologically the same as the one used for inoculation. For several weeks, the rabbits continued to demonstrate areas of seborrhea.

In four weeks, the guinea-pigs showed an occasional desquamation which appeared like a flake of seborrhea. After several attempts to obtain cultures from these scales, the original organism could be demonstrated only once. About two weeks after these desquamations appeared on the guinea-pigs, they cleared up.

CONCLUSION

From the previous work of Unna, Merril and others and from the experimental work presented in this report, the weight of evidence as

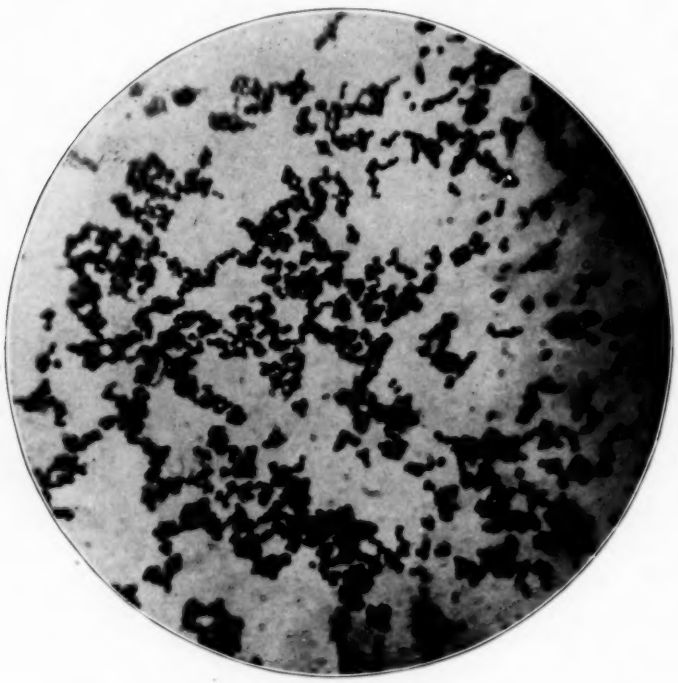

Fig. 2.—A morphologic picture of the organism.

to the cause of seborrhea seems to point to a coccus that is arranged in diplococcus and tetracoccus formations. Moreover, the size of the organism and the cultural characteristics seem to place it in a grouping somewhere between bacteria and yeasts.

From the hygienic consideration, these experiments seem to indicate that seborrhea is an infectious disease of the hairy scalp and is capable of being transmitted. The widespread nature of the disease among the human race can be explained by the fact that barber shops are constantly using the same instruments on all clients, which offers a means of transmitting the infection of the scalp.

SUMMARY

1. Seborrhea is a disease of the scalp that is apparently caused by an organism which is a coccus in nature, appearing in diplococcus and tetracoccus formation.

2. The disease is apparently transmissible.

CORRECTION

In the paper by Dr. F. Ronchese, on "Primary Actinomycosis of the Skin" (ARCH. DERMAT & SYPH. **20**:1 [July] 1929) the last phrase in the sentence at the top of page 8, referring to the article by Dr. Feit published in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY, June, 1928, should read: "the other patient, not treated with x-rays, died from pneumonia."

Abstracts from Current Literature

THE HEREDITARY TYPE OF ANGIONEUROTIC EDEMA. H. F. DUNLAP and W. F. LEMON, Am. J. M. Sc. **177**:259 (Feb.) 1929.

A discussion of the etiology, symptoms and hereditary relationship in this disease is given, and one family is added to those already reported. Nothing new is advanced in explanation of the disease.

THE PROBLEM OF PIGMENT FORMATION. B. BLOCH, Am. J. M. Sc. **177**:609 (May) 1929.

This article is rather technical and does not lend itself readily to abstracting. The author's investigations concern chiefly his experimental work with the dopa reaction, which is the term he uses to designate the reaction of cells containing dopa-oxydase when placed in a 1 per cent solution of 3-4 dioxyphenylalanine.

In brief his conclusions are as follows: The specific dopa reaction is found to be positive in the higher vertebrates in all places in which melanotic pigment is formed, i.e., the melanoblasts. Wherever a natural production of melanin was going on, the dopa reaction was positive, but when this process was temporarily or definitely lacking, the reaction was negative. The cell agent responsible for the dopa reaction was found to have the characteristics of an oxidizing ferment and was designated dopa-oxydase. The nature of the mother substances of natural melanins is not known exactly, but pyrocatechin derivatives may play a rôle in the natural pigment formation.

SCLEROSING TREATMENT OF VARICOSE VEINS BY CHEMICAL IRRITANTS. R. G. LOGEFEIL and A. W. DAHLSTROM, Am. J. M. Sc. **177**:690 (May) 1929.

The results of injecting a sclerosing solution into varicose veins are given, an invert sugar solution (invertose) being used. This was practically painless and nontoxic, was not followed by sloughing in case of extravenous injection and produced no general reactions.

In ninety-six cases of varicosities of the lower extremities there were twenty ulcers, eight cases of eczema and eight with extensive edema. The average number of injections was between five and six, from 5 to 20 cc. of solution being used at each injection. Good results were obtained in ninety-two cases, fair results in two and in two the outcome was unknown.

The authors believe that this is the method of choice on account of less danger of embolism, less cost, less pain, no scar, few recurrences and no loss of time to the patient.

JAMIESON, Detroit.

BLOOD CHOLESTEROL: AFTER FASTING AND AFTER CHOLESTEROL INGESTION. G. W. PUCHER and G. E. SLY, Buffalo Gen. Hosp. Bull. **7**:10 (June) 1929.

Results of experiments after twelve hour fasting periods indicate that the blood cholesterol of the same person varies from day to day to as great an extent as that of different persons. In the case of patients who were fed cholesterol, no definite conclusions could be drawn as to the influence on the blood cholesterol curve, but in four of six experiments there was a slight rise of the blood cholesterol over that of the control period.

THE BACTERIAL ACTION OF ROENTGEN RAYS. HIRSH W. SULKOWITCH, Bull. Johns Hopkins Hosp. **44**:439 (June) 1929.

From the author's experiments it is apparent that x-rays are lethal to bacteria and that different bacteria show varying degrees of resistance to x-rays. Only

a small number of organisms were studied. Experimental procedures are described, and there is appended an adequate bibliography on the subject.

TULAREMIA IN MINNESOTA. E. C. HANSON and R. G. GREEN, J. A. M. A. **92**:1921 (June 8) 1929.

Seven cases are reported, in three of which the infection was apparently insect borne. The cases were thought to be due to the bite of a deer-fly. In one patient tularemia developed from the bite of a cat which acted as an intermediate carrier of the disease. The cases were all of the ulceroglandular type, and in one case, as a result of a bite from a woodtick, the initial lesion was on the scalp.

INFECTION WITH ORGANISMS OF VINCENT'S ANGINA FOLLOWING HUMAN BITE. C. REX FULLER and JOHN C. COTTRELL, J. A. M. A. **92**:2017 (June 15) 1929.

In the case reported, the infection occurred in the finger following a bite by a person suffering from ulcerative stomatitis. The Vincent organism was found.

ALLERGIC PURPURA. H. L. ALEXANDER and C. H. EYERMANN, J. A. M. A. **92**:2092 (June 22) 1929.

Six cases of Henoch's purpura are reported. In each case it was demonstrated that the condition was caused by a particular foodstuff to which the patient was sensitized. The foods were milk, egg, potato, wheat, chicken, beans, lamb, red plums, onions, strawberries and eating-apples. Desensitization, apparently, was not attempted.

SYSTEMIC BLASTOMYCOSIS. THEODORE TOEPEL, J. A. M. A. **93**:32 (July 6) 1929.

The patient was infected in the left index finger. The infection spread along the bones to the upper arm and then by metastases, to the lungs and left kidney. The patient died six months after the infection set in.

AN ORGANISM ISOLATED FROM TWO CASES OF "HAIRY TONGUE." LUTHER THOMPSON and HAMILTON MONTGOMERY, J. A. M. A. **93**:114 (July 13) 1929.

The organism isolated probably belongs to the genus *Actinomyces*. The cultural characteristics are fully described.

LEUKONYCHIA STRIATA. E. W. NETHERTON, J. A. M. A. **93**:116 (July 13) 1929.

The article consists of two short case reports of leukonychia striata occurring in young women. The condition resulted from trauma to the matrix caused by pushing back the fold of the skin with sharp instruments in manicuring. The white bands disappeared when the patients avoided the trauma.

MORE DEATHS FROM THALLIUM. CURRENT COMMENTS, J. A. M. A. **93**:122 (July 13) 1929.

The *Journal* comments on three more deaths from thallium poisoning reported by Merkel in the *Deutsche Zeitschrift für die gesamte gerichtliche Medizin* (**13**:237, 1929). The three children were all below normal physically and mentally, and the full amount of the drug was administered in divided doses. It is pointed out that for ringworm of the scalp the drug should be given in one dose, and for children infirm in any way this dose should be less than the usual amount.

INCIDENCE OF FOOT RINGWORM AMONG COLLEGE STUDENTS. ROBERT LEGGE, LEE BONAR and H. J. TEMPLETON, J. A. M. A. **93**:170 (July 20) 1929.

This is the second report on a survey made at the University of California. The first report dealt with the incidence of ringworm of the feet among students just from preparatory school. Infection was found in 53 per cent of the men and in 15 per cent of the women. After a year in college, men were affected to the extent of 79 per cent and women 17 per cent. The women's gymnasium was equipped with every known sanitary device, and the women students were required to wear rubber bathing shoes. They were not permitted to walk with bare feet on the floors of the showers or runways to the swimming pools. The men students were not so strictly supervised, and their gymnasium had none of the sanitary devices. It is thought that this single factor was important in controlling the infection among the women.

RATTNER, Chicago.

THE EFFECT OF PARATHYROID HORMONE AND INCREASED CALCIUM METABOLISM ON THE GROWTH OF TUMOR TISSUE. A. GOERNER and B. G. SHAFIROFF, J. Cancer Research **12**:294 (Dec.) 1928.

No inhibitory effect on tumor growth followed parathyroid hormone injections and an increase in serum calcium. The experiments were conducted on Flexner rat carcinoma and Crocker Fund sarcoma.

THE CARBOHYDRATE METABOLISM OF TUMORS. C. F. and G. T. CORI, J. Cancer Research **12**:301 (Dec.) 1928.

Tumor-bearing rats were found to have a lower intravenous lactic acid tolerance than normal rats, apparently because the tumor produces a certain amount of lactic acid. The intravenous dextrose tolerance of tumor-bearing rats was normal.

CANCER AND CONCOMITANT DISEASE. H. B. WOOD, J. Cancer Research **12**:314 (Dec.) 1928.

Concomitant disease with cancer is an effective factor in terminating life, but usually exists independently and has no etiologic significance.

SKIN LESIONS AMONG TAR WORKERS. H. B. WOOD, J. Cancer Research **13**:54 (March) 1929.

The author's investigations led him to the conclusion that the production of tar papillomas and epitheliomas is due to chemical rather than physical irritation and that only the high temperature coal distillates contain carcinogenic substances. Anthracene oil is the principal high temperature content of coal tar. Petroleum tar and low temperature distillate tars are thought not to possess irritant action. The heavy oils yielded by the high temperatures in coke-making produce pustular skin lesions more readily than the low temperature light oils but probably do not produce papillomas. The phenol oils cause dermatitis in susceptible skin. Observations conducted at gas works, coke biproducts plants, briquette factories, and tar paper and roofing paper factories failed to disclose evidence of occupational cancer, but disclosed tar warts, without epitheliomatous changes, among handlers of coke tar. Among the latter the incidence of warts was high. No tar warts were observed in gas works producing water gas nor in briquette factories.

AGGLUTINATION PHENOMENA IN CANCER. N. WATERMAN and L. DE KROMME, J. Cancer Research **13**:60 (March) 1929.

Human serum possesses cytolytic properties and agglutinins for tumor cells. These immunologic factors are not present in umbilical serum and are, therefore, acquired properties.

PARAFFIN NOT PRODUCTIVE OF CANCER. H. B. WOOD, J. Cancer Research **13**:97 (March) 1929.

Pure paraffin is inert and in no way deleterious to the health of persons using it. High temperature coal tar which gives the greatest proportion of cancers is poor in paraffin, and the tars containing the most paraffin produce no experimental cancers. Tumors from oil, liquid petrolatum or paraffin injections are not neoplasms but foreign body granulomas due to the long continued action of a low grade chemical irritant. Dermatitis and folliculitis in paraffin workers is not due to pure paraffin.

H. R. FOERSTER, Milwaukee.

RELATION OF VARICELLA TO HERPES ZOSTER: I. STATISTICAL OBSERVATIONS. T. M. RIVERS and L. A. ELDRIDGE, JR., J. Exper. Med. **49**:899 (June) 1929. II. CLINICAL AND EXPERIMENTAL OBSERVATIONS. Ibid. p. 907.

With regard to the incidence of herpes zoster and varicella at different ages, statistics showed that the former was mostly observed beyond the age of 10 and the latter before that age. While varicella showed a constant seasonal variation, herpes zoster did not.

In considering experimental and clinical observations regarding the identity of the two viruses in question the writers concluded that the etiologic factors were not identical in the majority of cases.

ETIOLOGY OF OROYA FEVER: XIV. THE INSECT VECTORS OF CARRION'S DISEASE. H. NOGUCHI, R. C. SHANNON, E. B. TILDEN and J. R. TYLER, J. Exper. Med. **49**:993 (June) 1929.

In experiments to determine insect carriers of *Bartonella bacilliformis,* many blood-sucking insects from Peru were utilized, but only with *Phlebotomi* were inoculations positive. *Phlebotomus noguchi* was definitely a vector, *Phlebotomus verrucorum* was probably one and *Phlebotomus peruensis* was doubtful.

A CASE OF CUTANEOUS DIPHTHERIA AS THE CAUSE OF AN OUTBREAK. ARTHUR MASSEY and GLADYS J. C. RUSSELL, Brit. M. J. **1**:992 (June 1) 1929.

A nurse sick with faucial diphtheria developed cutaneous diphtheria in a patch of intertrigo behind the ear. This was overlooked until three other nurses in the same institution were taken ill with faucial diphtheria. On subsequent examinations positive cultures were obtained from the throats of three more nurses. The authors traced the outbreak to the case of diphtheritic dermatitis.

TREATMENT OF PRURITUS ANI AND ANAL FISSURE. W. B. GABRIEL, Brit. M. J. **1**:1070 (June 15) 1929.

For essential pruritus ani the author uses subcutaneous injections of an anesthetic, made up of a 3 per cent solution of anesthesin, with benzyl alcohol 5 per cent and ether 10 per cent in sterilized olive oil. The solution is injected subcutaneously in a fan-shaped manner around the anal margin. Sixteen patients were satisfactorily treated in this manner. There were no complications other than a slight burning pain. Injections varied in number from one to six, and the largest amount of solution received by one patient was 22 cc. Four cc. was usually injected at one sitting. Three cases are reported, with a detailed description of the treatment of rectal fissures.

HERPES ZOSTER AND VARICELLA. DONALD STEWART, M. J. Australia **1**:745 (June 1) 1929.

A boy aged 4 years and 6 months had herpes zoster involving the area of the third right dorsal nerve. He was comfortable and afebrile; the results of physical examination were otherwise negative. Four days later, fever and sore

throat developed, and on the chest and back a definite varicella rash with about thirty scattered vesicles. The child and his sisters were said to have had chickenpox three years previously. There is a brief review of the literature.

MOLLUSCUM CONTAGIOSUM AND TURKISH BATHS. C. G. CROWLEY, M. J. Australia **1**:806 (June 15) 1929.

Three cases were seen within two days in Melbourne. Each of the patients had been taking Turkish baths in the same bathing establishment. The condition is one rarely met with in Australia, and the observation of three cases within two days was considered so unusual as to warrant a report, especially so because English workers have been calling attention to the association of molluscum contagiosum and Turkish baths.

RATTNER, Chicago.

KERATOSIS PUNCTATA. H. C. SEMON, Proc. Roy. Soc. Med. **22**:349, 1929.

A woman, aged 45, a masseuse, had an abnormal condition of the palm of the right hand for over fifteen years. The palm always became sore after playing tennis. For the past year she had noticed, in addition to redness and roughness, the slow formation of groups of little horny plugs, which themselves seemed to cause irritation. Removal of these with a needle gave some relief, but thickened ridges at points of flexion of fingers often gave rise to cracks, which at the time were disabling. Lesions were limited to the palm and flexor aspects of the first joints of the fingers and thumb of the right hand. General diffuse thickening of the skin in these areas, with chronic hyperemia of passive type was present. Over the points of maximum flexion, the thickening was accentuated, and there was a tendency to the production of transverse fissures, which did not appear to penetrate lower than the corneous layer. Scattered irregularly over the affected region were small groups of pits the size of a pinhead, some of which, if viewed with a lens, could be seen to contain minute keratinous plugs. The skin of the palm as a whole, appeared to be dried and more scaly than is normal. This disease has been studied by Hallopeau and Claisse (*Bull. Soc. franç. de dermat et syph.*, 1891, p. 116) who, on histologic grounds, assigned to it a nevoid origin. Galloway and Adamson described two cases in a husband and his wife (cousins) and demonstrated them with microscopic slides to this section in 1918 (*Brit. J. Dermat.* **30**:123, 1918). Their evidence goes to support that view still further. They were unable to find any pathologic alteration "other than considerable thickening of the horny layer at the site of a warty lesion." Dr. Adamson thought the case one of lichen planus, an impression apparently confirmed by the presence of white patches in the mouth.

UNUSUAL LICHEN PLANUS. H. W. BARBER, Proc. Roy. Soc. Med. **22**:351, 1929.

There was on the scalp an oval area of cicatricial atrophy, completely denuded of hair, and red in color from capillary dilatation: on vitropressure the dilated vessels were not obliterated entirely. On the buttocks and thighs, were grouped follicular lesions resembling lichen spinulosus. In the perineum and on the mucous membranes of the cheeks, typical lichen planus lesions were present. The case is of interest as showing the combination of cicatricial alopecia of the scalp with follicular keratoses on the trunk, such as has been described by Dr. Graham Little (*Brit. J. Dermat.*, 1915, 183), Dr. Dore (ibid., 295), and Dr. Wallace Beatty and Dr. Speares (ibid., 331), and the association at the same time of typical lichen planus. It is difficult to avoid the conclusion that some cases, at least, of so-called folliculitis decalvans or pseudopelade are really cases of lichen planus, and that the "lichen spinulosus," described in association with it by several observers is merely the follicular variety of this disease.

GUY, Pittsburgh.

INVESTIGATION OF THE SWEAT FUNCTION IN LEPROUS LESIONS BY THE UTILIZATION OF PILOCARPINE IONIZATION. JEANSELME, R. GIRAUDEAU and Y. BUREAU, Bull. Soc. franç. de dermat. et syph. **36**:139, 1929.

The authors devised a special cream containing pilocarpine which was used in their experiments. In various macular lesions of the disease, they found diminished sweat secretion which histologic study demonstrated to be due to definite anatomic alterations of the sudoriparous glands.

SERPIGINOUS CHANCROID. GRAHAM LITTLE. Bull. Soc. franç. de dermat. et syph. **36**:151, 1929.

Little reports four cases of serpiginous chancroid. Clinically, it must often be confounded with granuloma inguinale, which is rare in England and France. The latter lesions, however, are always nodules primarily, while serpiginous chancroid always shows flat ulcerations. Bacteriologic study, however, must support clinical diagnostic assumptions.

FOX-FORDYCE DISEASE. L. M. PAUTRIER, Bull. Soc. franç de dermat. et syph. **36**:157, 1929.

Pautrier records a typical example of Fox-Fordyce disease in a woman, aged 50. The eruption was preceded for several months by pruritus of the affected parts. The author considers this disease as one of the atypical forms of pruritus with lichenification.

AN ALMOST ACHROMIC PEDUNCULATED MELANOMA. E. RAMEL. Bull. Soc. franç. de dermat. et syph. **36**:161, 1929.

Under this somewhat paradoxical title, the author describes a rare growth arising from a melanotic mole. In his case, the mass resembled granuloma pyogenicum, with a few scattered masses of melanotic pigment near the base of the pedicle. After surgical removal, a single metastasis occurred in the vicinity of the original tumor. The patient died months later with symptoms which pointed to cerebral disease but which were not definitely diagnosed because autopsy was denied.

CUTANEOUS ERUPTION OF PARAKERATOTIC AND ECZEMATOUS TYPE ELICITED BY THE INTRADERMIC INJECTION OF A YEAST SUSPENSION IN A PATIENT AFFECTED WITH INTERTRIGO AND ECZEMA FOR FOURTEEN MONTHS. P. RAVAUT and H. RABEAU, Bull. Soc. franç. de dermat. et syph. **36**:170, 1929.

In a patient with intertrigo and eczema, the authors were unable to demonstrate the presence of yeasts. By an intradermal injection of a yeast suspension they produced a reaction which took on the features of an eczematid. Repetition of the injection provoked the same reaction. The original lesions, which had receded, were apparently reactivated by the injection. Two other patients similarly tested have shown the same results. The authors think that their research throws some light on the cause of certain ill-defined entities such as the eczematids (Darier), parakeratosis psoriasiformis (Brocq) and some forms of dermatitis seborrheica.

A CASE OF PROBABLE REINFECTION OR SUPERINFECTION IN NICOLAS-FAVRE DISEASE. M. KITCHEVATZ, Bull. Soc. franç. de dermat. et syph. **36**:173, 1929.

Kitchevatz reports a case of Nicolas-Favre disease which developed in 1926 in a typical manner. It healed, but in 1928 there was a return of the symptoms. The author gives many reasons for considering the second attack an instance of reinfection or superinfection and not an exacerbation or recrudescence of a latent infection.

TREATMENT OF NICOLAS-FAVRE DISEASE BY INTRAVENOUS INJECTIONS OF AMMONIAC COPPER SULPHATE. P. PETGES, R. DAVID-CHAUSSEE and A. PETGES, Bull. Soc. franç. de dermat. et syph. **36**:178, 1929.

Satisfactory results are reported with ammoniac copper sulphate. Clear solutions produced no reactions, but two patients had moderate systemic ill effects from the employment of cloudy solutions. The average dose was 1 cc. of a 4 per cent solution. The authors' experience in twelve cases showed that this drug gave much better therapeutic results than operation.

SPLENOMEGALY IN EARLY SYPHILIS. LOUSTE and R. COHEN. Bull. Soc. franç. de dermat. et syph. **36**:**186**, 1929.

The authors think that scant recognition has been given to the splenomegaly that occurs during the debut of syphilis. They have found a moderate enlargement of the spleen by percussion (it is not palpable at that time) in a vast majority of cases. It may appear as early as from five to eight days after the appearance of the chancre. It has a definite diagnostic value.

WASSERMANN-FAST SYPHILIS; AN INVESTIGATION. E. SCHULMANN and G. LEVY. Bull. Soc. franç. de dermat. et syph. **36**:198, 1929.

The authors define a case as Wassermann-fast when there are no occult or hidden manifestations of the disease except the presence of a positive Wassermann reaction which has persisted for at least two years despite modern intensive treatment. They report fifteen such cases. They do not think that continuation of treatment is indicated in Wassermann-fast cases, but the patients should remain under surveillance and treatment should be resumed on the least indication of activity. Marriage might be permitted, provided "preventive" treatment is taken by the expectant mother.

DERMATITIS HERPETIFORMIS WITH BULLA AND LARGE ERYTHEMATOUS PATCHES; ATYPICAL FORMS OF THIS DISEASE. GOUGEROT, BARTHELEMY and P. UHRY, Bull. Soc. franç. de dermat. et syph. **36**:251, 1929.

The authors presented a patient in whom the unusual features of the disease were the presence of bullae and large, slightly raised, polycyclic patches. In addition, autohemotherapy and acetarsone (stovarsol) caused exacerbation of the eruption.

A LICHENOID ERUPTION AND ULCERATIVE STOMATITIS PRODUCED BY A GOLD SALT. GOUGEROT, BURNIER and PHOTINOS, Bull. Soc. franç. de dermat. et syph. **36**:254, 1929.

The production of a lichenoid eruption and stomatitis by one of the gold compounds is recorded.

CUTANEOUS ATROPHY WITH SCLERODERMA, MELANODERMA AND CALCINOSIS. LORTAT-JACOB, FERNET and Y. BUREAU, Bull. Soc. franç. de dermat. et syph. **36**:256, 1929.

The authors presented a complex case exhibiting melanosis of the exposed surfaces, and an intermingled scleroderma and atrophy. In the malar regions, calcareous concretions had formed.

COEXISTENCE OF LICHEN PLANUS AND LICHEN NITIDUS. RABUT and GUEX, Ann. de dermat. et syph. **36**:261, 1929.

The patient presented annular lichen planus on the genitals with buccal lesions as well as lichen nitidus. Biopsy had not been performed.

THE TREATMENT OF GRANULOMA ANNULARE BY THE VACCINE OF VANDREMER. A. SEZARY and A. DURUY, Bull. Soc. franç. de dermat. et syph. **36**:270, 1929.

This vaccine consists of a suspension of the nonacidophilic, granular form of the tubercle bacillus. The authors reported two cases in which this preparation produced improvement but not cure. The more recent the lesion, the better was the response.

LICHEN SPINULOSUS AND PSEUDOPELADE. P. PHOTINOS, Bull. Soc. franç. de dermat. et syph. **36**:273, 1929.

A patient with lichen spinulosus and pseudopelade was presented. The author does not commit himself on the question of the unity of this syndrome.

SYPHILIS WITH AN IRREDUCIBLE WASSERMANN REACTION. HOW SHOULD IT BE TREATED? GALLIOT, Bull. Soc. franç. de dermat. et syph. **36**:277, 1929.

Galliot discusses three types of cases which come under the foregoing category:

1. Those in patients with a persistently positive reaction in which the disease was of a malignant type. These should receive uninterrupted treatment.

2. Those in old syphilitic patients in whom a negative reaction has changed to positive. These, likewise, require intensive therapy.

3. The usual type, in which a positive reaction persists despite good treatment and the absence of all other signs of the disease.

It is to this class that the author directs special attention. He describes two patients of this type in whom death from visceral manifestations of the disease occurred suddenly. The author seems to have no positive opinions on this subject, but in the discussion some interesting points were mentioned and, therefore, are abstracted.

Clement Simon has seen Wassermann-fast patients give serologically negative reactions when treatment was discontinued.

Ravaut suggested sodium thiosulphate.

Schulmann believes that few cases will fall into the category of pure Wassermann-fast if search is made for the resistant focus of the disease.

Sezary thinks that these cases must be individualized for proper management.

Milian stated that true Wassermann-fast cases are rare. Syphilitic hepatitis is often the cause of an irreducible Wassermann reaction.

MICHAEL, Houston, Texas.

DERMATOLOGIC ABSTRACTS

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

LEUKOSARCOMA. D. H. FLASHMAN and S. S. LEOPOLD, Am. J. M. Sc. **177**:651 (May) 1929.

Flashman and Leopold report the case of a man, aged 60, who gave a history of a swelling in the right inguinal region for twelve months. A biopsy showed lymphosarcoma. A roentgenogram revealed a tumor in the pelvis. The leukocyte count was normal. He was given roentgen treatments for from four to five months, during which time several examinations of the blood were negative. In the following month he developed a leukemia, the white blood count rapidly increasing to 444,000 cells per cubic millimeter at the time of death and the differential blood count showing from 90 to 96 per cent small lymphocytes. The autopsy revealed a primary, invasive lymphosarcoma in the inguinal and retroperitoneal regions; an extensive involvement, resembling leukemia, of most of the lymphoid system, liver, spleen and bone-marrow of the right femur, and metastatic nodules in most

of the organs. In the tissues there were both large lymphoblasts and small lymphocytes, with intermediate types and in various combinations, indicating that these cells represent different degrees of hyperplasia or differentiation. The picture appears intermediate in character between typical lymphosarcoma and lymphatic leukemia, rather than a combination of two separate entities. The case falls in the group of leukosarcoma.

TUMOR FORMATION FOLLOWING FREEZING WITH CARBON DIOXIDE SNOW. I. BERENBLUM, Brit. J. Exper. Path. **10**:179 (April) 1929.

Berenblum reports the production of malignant tumors in mice by repeated mild freezing of the skin with carbon dioxide snow. Over a long period only a small percentage of mice will respond in this manner, while the time necessary to produce such tumors is much longer than with the use of a carcinogenic tar.

AMBULATORY TREATMENT OF VARICOSE ULCERS. L. DE GAETANO, Policlinico **36**:113 (Jan. 28) 1929.

De Gaetano divides his treatment into two distinct stages: (1) preparatory and (2) bandage. In the first stage, he disinfects the skin, treats the eczema and stimulates the ulcerous tissues to prepare them for recovery. Hence: (*a*) the skin is painted with rectified benzene; (*b*) the skin is disinfected with acidified alcohol (the Gaetano formula, 100 Gm. of alcohol at 70 C., or 158 F., 20 drops of glacial acetic acid); (*c*) the eczema is treated with any good antieczema ointment; (*d*) a reactivation of the connective tissue and the epithelium within the ulcers is produced by touching the base with silver nitrate and by using, to stimulate epithelization, an ointment with a scarlet B base (petrolatum and wool fat, 10 Gm. each, scarlet B, 1 Gm.). The first stage will vary in length from a few days to ten or twenty days, according to the condition of the lesions and the hygiene exercised by the patient. In the second stage, the more important, a special type of bandage is the principal thing. The skin is disinfected, antieczema ointments are applied, the surface of the ulcers is cauterized and epithelizing substances are applied. This repetition of the first stage procedures is accomplished with the leg of the patient raised so as to form a right angle with the trunk, the leg being left in that position for from five to ten minutes. A thin fold of sterile gauze is then applied, to absorb the secretion that exudates from the lesions. The compressive bandage is then applied. This consists of strips of cerecloth applied in spiral fashion from the base of the toes up to the knee. The strips of cerecloth should be from 2 to 2.5 cm. wide and about 30 cm. long. At the calcaneum, they should be a little wider and shorter. Two square meters of cloth is required for each leg. The strips are warmed slightly before being used and are applied rather tight, especially in the region of the ulcers. Rubber cerecloth must not be used, as it irritates the tissues. It is of paramount importance that the bandage shall be compressive, and not merely protective, as was the original Baynton bandage. One or two rubber bands may be used to prevent the bandage from loosening in a few days, during ambulatory treatment. The patient is then requested to walk a short distance in order to ascertain what modification of the venous circulation has been brought about, on which is based chiefly the hopes of recovery. The patient returns in from five to ten days, according to the amount of secretion, to have the bandage renewed, unless untoward incidents (high fever, pain due to too tight compression) cause him to come sooner. On removing the cerecloth, one will note, in the region of the lesions, a dense grayish fluid consisting of pus and, in great part, of products of maceration, but, after a thorough cleansing of the lesions, one will be surprised to observe the rapid improvement, as shown by a clear tendency toward granulation and epithelization. The author has tried this method in patients with extensive ulcers of long standing, and has always secured satisfactory results.

LOCAL TREATMENT OF BURNS. E. MAKAI, Munchen. med. Wchnschr. **76**:574 (April 5) 1929.

For the last ten years Makai has used pure kaolin powder or kaolin powder with an admixture of tannin or of some similar drug for the treatment of burns. A thick layer (from 3 to 4 mm.) of the powder is sprinkled daily on the surface of the burn, which is covered with some gauze compresses, and a thin layer of zinc oxide ointment is spread over it. The whole is covered with a light cotton dressing. The thick layer of powder absorbs the wound secretion, the drying of which with the formation of crusts is prevented by the thin layer of the zinc ointment over the gauze. Therefore, the daily changing of the dressing is made painless; the granulations are exuberant and clean; the elimination of the necrosed tissues and the epithelization of the burned surface are very rapid; the general intoxication is minimal, and the resulting scars are soft, elastic and not deforming. In a case of a severe and very extensive burn (of the second and third degrees), with high fever, vomiting and toxic exanthema, reported by him, the patient recovered in four weeks with only a small defect in the epithelization of the wound.

LIVER THERAPY IN INFECTIONS, IN DERMATITIS AND IN INTOXICATIONS WITH ARSPHENAMINE OR BISMUTH. B. SPIETHOFF, Munchen. med. Wchnschr. **76**:577 (April 5) 1929.

Because of the acknowledged detoxicating function of the liver and because of the effect of liver extract on the gastric and intestinal flora, observed in the treatment of pernicious anemia with liver extract, Spiethoff tried liver therapy in some cases of infection (cystitis and pyelitis), intoxication (bismuth, mercury and arsphenamine) and dermatitis. The pathogenic micro-organisms did not disappear from the urine in patients with cystitis or pyelitis, treated with the liver extract, but the symptoms of intoxication and the general condition of the patients were considerably ameliorated. In experimental intoxication of the animals with bismuth, arsenic or mercury, amelioration of the grave general conditions, of the poor appetite, of the diarrhea and of the fever was observed soon (in a few hours) after the subcutaneous administration of the liver extract, and for the next two years. Liver therapy was very successfully used by the author in arsphenamine or bismuth dermatosis and in psoriasis vulgaris.

SKIN DISEASE CAUSED BY BRUCELLA ABORTUS. E. URBACH, Wien. klin. Wchnschr. **42**:391 (March 28) 1929.

Urbach describes a peculiar skin disease. A veterinarian noticed small blisters on both hands. The day before he had treated a cow which was infected with *Brucella abortus*. A few days later the blisters had developed into a severe erythema multiforme bullosum haemorrhagicum. About three weeks later the epidermis of the hands was exfoliated, and underneath appeared numerous, strong itching, painful nodules, about the size of lentils. No treatment was of any avail. After another month the epidermis was once more exfoliated, and the same eruptions appeared again. Some time later they healed but left noticeable scars, especially on the palmar surface of the hands. In order to determine whether this skin disease was due to *Brucella abortus*, tests were made. The cow to which the infection had been traced gave a positive agglutination reaction. In the patient the agglutination was negative. However, he showed a cutaneous allergia toward *Brucella abortus*, and this fact led to the assumption that the dermatosis was caused by this pathogenic micro-organism. The author states that similar skin diseases have been noted in other cases of infection with *Brucella abortus*. The peculiar scarred healing, however, has not been reported before. He also points out that among cattle this infection is widespread, and that man may easily be infected by raw milk or butter.

MALARIA TREATMENT OF CONGENITAL SYPHILIS IN CHILDREN. H. KOCH, Wien. klin. Wchnschr. **42**:400 (March 28) 1929.

Malaria therapy was used by Koch in four children with congenital syphilis. The patients did not show clinical symptoms of the disease. Tests of the blood and of the spinal fluid, however, gave positive reactions for syphilis. The malaria treatments were well supported by all the patients, and ceased after from seven to nine attacks. The splenic tumor, which developed during the treatment, also disappeared. Slight loss of weight was noted and the children appeared pale. However, recovery was rapid and the reactions of the blood and spinal fluid were negative. The author asserts that this treatment is especially suitable for those cases in which arsphenamine, mercury and bismuth do not bring the desired results. In order to ascertain whether malaria therapy can actually prevent paralysis, a longer period of observation will be necessary.

CANCER FOLLOWING BURN. H. STAUFFER, Ztschr. Krebsforsch. **28**:418 (March 20) 1929.

Stauffer divides cases of cancer following burns into two groups: instances of cancer developing in a burn itself and cases of cancer developing in the scar of a burn. The latter type of cancer is relatively frequent but the former type is rare. The author gives summaries of the case reports in all the instances of true burn cancer reported in the literature. To these he adds the report of a personally observed instance of this condition: A man, aged 66, received a flame burn on the cheek while working in a foundry; thirty days later a typical cancroid developed in the noncicatrized burn.

Society Transactions

CHICAGO DERMATOLOGICAL SOCIETY ENTERTAINING THE DERMATOLOGICAL CONFERENCE OF THE MISSISSIPPI VALLEY

Second Annual Meeting, Jan. 16, 1929

FRANCIS EUGENE SENEAR, M.D., *Presiding*

PITYRIASIS RUBRA PILARIS. Presented by DR. FINNERUD.

A single woman, aged 25, had a slightly itching eruption of generalized distribution, of six months' duration. She said that the disorder began as redness and scaling of the face and neck, following sunburn, and spread within a few weeks to involve these areas and the extremities practically diffusely. Her personal history was negative except for irregularity of the menstrual periods.

When presented, the condition was much improved from the use of local preparations and the administration of thyroid extract. On Sept. 29, 1928, the basal metabolic rate was 22 per cent below the normal average.

PITYRIASIS RUBRA PILARIS. Presented by DR. FOERSTER and DR. WIEDER.

A. K., a white man, a student, aged 22, had a generalized eruption of twelve years' duration, which reached its fullest development five years before presentation. On Aug. 21, 1922, examination showed a generalized xerosis with symmetrically placed groups of discrete papules and sharply circumscribed patches. The papules, which were the size of a small pinhead, were follicular, rounded, firm, nonscaling and discrete and were located over the upper midsternal area, the upper surfaces of the upper arms and forearms, legs, thighs and to a limited extent the trunk. The patches, which were moderately infiltrated, dry, inflammatory and scaly, were located on the flexor surfaces of the forearms. Less well defined inflammatory patches, with pronounced hyperkeratosis manifesting itself as yellowish-gray adherent scales, were present on the forehead, nose, nasolabial folds, circumoral area, chin, ears, scalp and neck. The palmar and plantar surfaces showed a uniform hyperkeratosis, limited sharply on the sides of the hands and feet and exhibiting a tendency to lamellar exfoliation. The nails were dry, thickened and brittle. The mucous membranes were normal.

The condition was diagnosed pityriasis rubra pilaris, and the area of the thymus gland was exposed to the roentgen rays according to the method introduced by Brocq in the treatment for psoriasis. Marked improvement followed a series of these treatments, with the additional use of emollient ointments only. Nine weeks after the first treatment there were only small areas of moderate inflammation, slightly inflammatory or pigmentary remains of other patches and little scaling. There was also an improvement in the patient's general health and a gain in weight. There had never been a complete remission, but frequent exacerbations had always responded to repetition of this treatment.

The patient was presented to draw attention to this therapy, which is believed to have been beneficial in this case.

DISCUSSION

DR. FOERSTER: The sharp margination of the palmar lesions, the peculiar scaling and the nutmeg-grater type of papules in Dr. Finnerud's patient establish the diagnosis of lichen ruber acuminatus.

DR. ORMSBY: I believe that the case is one of pityriasis rubra pilaris. About three or four years ago I presented a patient with a diagnosis of pityriasis rubra

pilaris, or lichen ruber acuminatus. In the discussion that followed I stated that the identity of the two diseases was apparently settled at an International Congress where a patient was exhibited whose disorder was recognized by representatives of the French school as pityriasis rubra pilaris and by representatives of the German school as lichen ruber acuminatus. I believe that the identity is rather generally accepted. One of our colleagues still believes that there should be a distinction, and I should be interested to hear him discuss the position of the case.

DR. ZWICK: The peculiar appearance of the patient's face, so aptly described by Dr. Foerster as "waxy," was also noted by Dr. Goeckerman and myself. It reminded one of the masklike or frozen facial expression accompanied by a somewhat translucent and glossy condition of the skin characteristic of the "facies sebacea" in some patients with Economo's epidemic encephalitis.

If my memory serves me correctly, however, there was no mention in the patient's history of a febrile infection, not even of an influenza-like nature, with which the cutaneous symptoms could be linked up.

In connection with Dr. Foersters' case of pityriasis rubra pilaris and in response to Dr. Ormsby's remark I suggest that the designation "lichen acuminatus" be reserved for the rare acuminate forms of Wilson's lichen. As to the identity or differentiation of Kaposi's cases of lichen ruber acuminatus and Devergie's cases of pityriasis rubra pilaris a discussion is at this moment not opportune.

DR. GOECKERMAN: I thought that the appearance of the patches in Dr. Finnerud's case suggested pityriasis rubra pilaris, but felt as Dr. Zwick did that we might be dealing with one of the conditions that follow epidemic encephalitis. On looking the patient over again, however, I was satisfied that it was a case of Devergie's disease. I could get no history of a severe antecedent infection of any kind.

DR. FINNERUD: I should like to have a word from Dr. Foerster as to their success in treating these patients with irradiation of the thymus area.

DR. H. R. FOERSTER: In our case we employed irradiation of the region of the thymus gland, and there appeared to be a definitely favorable effect. We have no explanation for the manner of action, but we feel convinced by the prompt improvement in the condition, without resort to other treatment, that the effect must have been the result of roentgenotherapy. There has been no extension of the lesions in this case since the patient first came under observation about six years ago. He has received the same type of roentgenotherapy during this time, almost twenty treatments, and the disease has retrogressed markedly. There have been frequent exacerbations of activity, with increased inflammation and hyperkeratosis, which have usually subsided promptly following irradiation of the region of the thymus gland.

We used this treatment on two other patients with pityriasis rubra pilaris, and in one instance there was a remarkably rapid disappearance of the lesions. The patient's skin remained clear for six months, and she has not been seen since that time. In the other case the eruption remained unchanged.

GUMMA OF THE TONGUE WITH CARCINOMATOUS DEGENERATION. Presented by DR. ZEISLER.

A man, aged 58, was first seen on Dec. 3, 1928, when he complained of a painless swelling of the tongue and increased excretion of saliva of one and one-half months' duration, and of a painful fissure of the tongue that had been present for one month. There was no history of a chancre. Examination then showed an irregular, deep fissure, extending three-fourths the length of the tongue in the midline. The remainder of the tongue had a keratotic, swollen appearance, and was covered with a whitish film. There were two large, firm glands in each anterior triangle. The tongue was not fixed. The Wassermann reaction was 4+. Biopsy revealed a squamous cell carcinoma.

The right lingual artery had been ligated, and the patient had received three injections of neoarsphenamine.

A Case for Diagnosis. Presented by Dr. Oliver and Dr. Finnerud.

A negro, aged 21, who was employed at the stockyards, had a lesion about the nail of the right ring finger, which had been present for three years. Preparations with potassium hydroxide showed no yeasts. A histologic examination had not yet been made.

DISCUSSION

Dr. Goeckerman: Without having an opportunity to study the case in any detail, I considered it a tuberculosis verrucosa cutis. I think that his work in the stockyards would readily expose him to such an infection.

Dr. Pusey: I do not see how we can definitely say that the condition is tuberculosis in this case. Inflammatory processes around the base of the nail occur with many organisms, and are chronic. The only question I should raise would be of the infective organism. I should not think it possible to make a definite diagnosis of tuberculosis from the picture I saw.

Dr. Grindon: I think that the condition is tuberculosis verrucosa cutis, but do not see how any one could tell definitely by inspection alone.

Dr. Ormsby: The lesion is definitely verrucous, and there is not much inflammation. Clinically, it presented the appearance of a verrucous tuberculosis, and in the absence of the appearance that is usually observed in blastomycosis, and with the duration of three years, I think that tuberculosis verrucosa cutis would come first.

Dr. H. R. Foerster: The patient said that at one time the lesion was large and pustular. I favor the diagnosis of tuberculosis verrucosa cutis.

Dr. Oliver: We made a diagnosis of tuberculosis verrucosa cutis because of the similarity of the lesion in this case to that in the case of the colored man we showed some years ago, who presented the same type of lesions about the fingernails and heels, which proved to be of that disorder.

Note: No histologic examination was possible, as the patient failed to make a further appearance.

Actinomycosis. Presented by Dr. Oliver and Dr. Finnerud.

T. A., aged 28, a factory worker, had what he believed to be a boil, of seven weeks' duration, on the right side of the neck anteriorly. It appeared as a lump the size of a walnut, at the time he was having trouble with an abscessed tooth of the right lower jaw, and three and a half weeks after its onset was treated by crucial incision. Since then the involved area had become much larger, and a great deal of pus had drained not only from the lesion itself but from adjacent tissues.

Examination revealed a markedly indurated area, the size of a palm, with a fibrinopurulent coating at its center and numerous papulopustules and nodules in it elsewhere. There was apparently sinus formation in the lesion. The jaw was held fixed and the patient was in moderate discomfort. Roentgen examination revealed a large root abscess of the second right molar. Since the time of operation the patient's temperature had ranged from 99 to 102 F. Potassium hydroxide preparations of the pus showed no noteworthy observations. Histologic examination had not yet been completed. (Histologic examination later showed the ray fungus in the tissues and the microscopic picture of actinomycosis.)

DISCUSSION

Dr. Klauder: I believe that the condition is actinomycosis.

Dr. Finnerud: According to the surgeon, the lesion began as a "furuncle," the size of a walnut, and was operated on about three and a half weeks later—about three weeks ago. There has been copious discharge since then, and the lesion has become harder. The whole process occurred following the extraction of an

abscessed tooth. He was seen for the first time yesterday at my clinic, and therefore no histologic study has been possible as yet. "Sulphur granules" were not detected in the pus.

DR. MICHELSON: I think that we should call attention to the fact that these diseases are serious and the prognosis is bad.

DR. TOMLINSON: Thinking of a possible coccidioides immitis, I should like to ask whether the patient's previous health has been good and if there has been any preceding abscess formation.

DR. H. R. FOERSTER: While agreeing to the diagnosis, I think that mycetoma infection is one of the conditions to be considered in a differential diagnosis.

DR. SWEITZER: I should not consider the question of etiology as long as the patient has been under observation so short a time, but the history of the disorder shows that it followed an operation on an infected tooth. We frequently see cases in which the tissues about a tooth are badly swollen, and it is always best to leave them alone and operate after the swelling has subsided. Often the patients will have a bad result, with extension of the infection into the surrounding tissues as the result of the action of the organism which affected the tooth, if they are operated on during the acute stage of the infection. They should be allowed to wait until the acute condition has subsided before the tooth is extracted.

The clinical picture in this case could well be osteomyelitis following the extraction of a tooth.

DR. FINNERUD: I think that we shall be able to demonstrate the organisms in the sections. I should like to have Dr. Lain give his impression, as he said he sees several of these cases each year.

DR. LAIN: I cannot add much of value to what has already been said, but this patient presented a familiar picture to me. It is a characteristic picture both in the history and in the clinical appearance. I frequently see actinomycosis following extraction of an abscessed tooth. Whether or not that provided the proper trauma for the spread of the infection, or whether the infection existed before the extraction I do not know. I believe that by repeated trial the organisms can be demonstrated. I want to emphasize what Dr. Michelson has said regarding the seriousness of the ray fungus infections. These patients must be treated early, both constitutionally and locally, if one is to expect results. Locally, roentgenotherapy is of value, and internally I have found the intravenous use of sodium iodide the most acceptable treatment.

A CASE FOR DIAGNOSIS. Presented by DR. NOMLAND (by invitation).

A white man, aged 40, was first seen in the dermatologic department of Rush Medical College in March, 1928. He then had a papulovesicular dermatitis situated about the scrotum, on the adjacent thighs, back, shoulders, abdomen and extremities, which was of two years' duration. He said that the condition began as a vesicular eruption on the hands and feet. A diagnosis of infectious eczematoid dermatitis was made, and the patient was not seen until November, 1928, when he returned with a generalized, lichenified dermatitis of three months' duration, which apparently had followed the application of a sulphur ointment.

Physical examination revealed a generalized, slightly scaling, lichenified, erythematous dermatitis, which spared only the palms and soles. The legs were edematous and showed slight oozing. There was a generalized lymphatic adenopathy, most marked in the axillae and groins. The spleen was not palpable.

Examinations of the blood showed: erythrocytes, 4,888,000; leukocytes, 15,500, and hemoglobin, 75 per cent. A differential count showed: polymorphonuclear neutrophils, 58 per cent; eosinophils, 16 per cent; basophils, 1 per cent; lymphocytes, 23 per cent, and large mononuclears, 3 per cent.

Biopsy from a lesion on the chest revealed the following: The epidermis showed slight parakeratosis, and there was acanthosis of the prickle cell layer. The upper

cutis was the site of a diffuse, fairly dense infiltrate. The blood vessels of the upper and middle corium were all surrounded by a dense, rather marked cell infiltrate, the cells being chiefly of the lymphocytic type, with some epithelioid and plasma cells. In a few places, the cells showed clumping of the nuclei, and a few giant cells of the Dorothy Reed Sternberg type were found. The nuclei of some of the cells showed evidences of disintegration.

DISCUSSION

DR. MOOK: It seemed to me that so many factors entered into this case that it would require considerable study. It might be a sensitization dermatitis, or a dermatitis exfoliativa from unknown origin. I could not make any diagnosis other than a generalized dermatitis, the cause to be determined later by examinations on the blood.

DR. WILE: I think that if changes in the blood were present together with the changes seen in the corium under the microscope, this would place this case in the group of lymphoblastomas. This is another of the nondescript cases of exfoliative dermatitis which, instead of clearing up, develop into a chronic type, then gradually blood changes occur, with the characteristic lymphoblastic infiltrate. If I recall the history, it stated that there were changes which were more those of Hodgkin's disease than those of leukemia; this, however, still places the patient's case in the group of lymphoblastomas.

DR. COLE: I noticed that in the histologic study the Dorothy Reed cells had been found. I may be wrong, but from the section I saw I should be greatly surprised if any Dorothy Reed cells were found in that type of infiltration. It was not a diffuse infiltration but a perivascular process. We usually consider Dorothy Reed cells in connection with Hodgkin's disease or the nodules of Hodgkin's disease and usually find them in the glands. I agree that the condition might be lymphosarcoma, not Hodgkin's disease.

DR. ZWICK: In connection with the etiology we should consider the fact that the patient worked with mercury almost uninterruptedly for more than a year. He said that at times considerable mercury was spilled on the floor and expressed the belief that there might be some connection between the condition of the skin and the exposure to the mercury.

DR. FINNERUD: The cells were not suggestive to me of Dorothy Reed cells. These appear as large connective tissue-like cells, with lightly stained acidophilic cytoplasm and several nuclei. They are more like small giant cells, and the nuclei may be arranged more or less in the form of circle segments. I understand that in the generalized and universal eruptions accompanying Hodgkin's disease the Dorothy Reed cells never have been found in the skin sections.

DR. ORMSBY: Did Dr. Nomland make any note about Dorothy Reed cells?

DR. NOMLAND: I said that cells of the Dorothy Reed Sternberg type were found, not typical Dorothy Reed cells, but cells with more than one nucleus and of that general type.

DR. TOMLINSON: As the first lesions were on the feet and about the scrotum and thighs, it would seem to me that a careful laboratory check should be made to exclude the possibility of generalized ringworm.

DR. NOMLAND: Just a few weeks ago, after not having any vesicular eruption for some time, this man returned with deep-seated, discrete vesicles on the forearms, the significance of which I have not discovered. There is none present now.

LEIOMYOMA. Presented by DR. NOMLAND (by invitation).

A man, aged 37, was first seen at the Central Free Dispensary, Rush Medical College, in December, 1928. He complained of a group of "itching lumps," which had been present on the right shoulder for five years. They began as small lesions,

which he thought were insect bites, and had slowly enlarged. He said that they always appeared larger when he was warm and were more troublesome in the summer months.

The lesion consisted of a group of about twenty, small, oval tumors, situated in an area the size of a palm, in the left scapular region. The individual tumors were superficial, rather hard and could be picked up with difficulty. The largest was about 10 by 4 mm., with somewhat pointed ends, the long axis following the lines of cleavage of the skin. Irritation seemed to make the lesion more pronounced.

Biopsy of one of the small tumors showed that it consisted of various sized whorls of smooth muscle, occupying the middle and upper dermis. In some places the muscle masses could be seen to arise from the erectorum pilorum muscle.

ERYTHEMA PERSTANS. Presented by DR. HEDGE.

A white boy, aged 18, a student, who was born in the United States, gave a history of a severe sunburn over his chest about three years before presentation. Following this he noted a mottled redness, which had persisted. There was no subjective symptom and no atrophy. The borders of the lesion were distinct and well defined, giving the impression of being slightly raised, although no elevation could be detected. There was no scaling. The patient had had no other dermatosis; the Wassermann reaction was negative.

Examination of the blood showed: erythrocytes, 4,500,000 and leukocytes, 9,000.

A recent acute exacerbation of a chronic appendicitis did not affect the lesion.

DISCUSSION

DR. MOOK: I thought that this was a case of feigned eruption. In the first place, the process is inflammatory, has recurrent exacerbations with inflammation and never gets entirely well. The characteristic thing about it was the outline of the eruption and the asymmetry, although there was an attempt at symmetry in producing it. The general type of the boy and the mental attitude made me think it a feigned eruption.

DR. PUSEY: I could not see how one could make a diagnosis of erythema perstans, but I am willing to back Dr. Mook's diagnosis.

DR. MITCHELL: The appearance of the boy's ears, nose, back and chest, and the fact that the disorder came on during the summer, suggest the possibility of the presence of hematoporphyrin, and the case might be investigated from this angle.

DR. HEDGE: This patient gave a definite history of severe sunburn three years ago. The family is not concerned about the eruption, except that they have been to several general practitioners, without a diagnosis from any one. I believe that there is something to the diagnosis of a feigned eruption from the type of the boy, but cannot agree that the eruption is of that type. The condition and location of the lesions make me feel that it is something else. I shall try to keep him under observation, and perhaps report in the future.

HODGKIN'S DISEASE. Presented by DR. OLIVER.

A woman, aged 25, had a glandular enlargement of six years' duration. It began with gradual increase in size of the cervical and axillary glands on the right, and at the end of eight months they were as large as walnuts, firm, but neither painful nor tender. Roentgenotherapy over a period of months caused them to return to their normal size. Two and one-half years before presentation the left axillary glands began to enlarge, and despite considerable roentgenotherapy the condition had failed to improve. She said that during 1926 she developed a cutaneous eruption, the nature of which was not known, which persisted for fourteen months. Backache had been present for two years, practically continuously, but more painful when the patient was lying down. She also had occasional attacks of severe coughing.

The blood count showed: erythrocytes, 3,300,000; leukocytes, 31,000, and hemoglobin, 60 per cent. The differential count showed 300 cells: polymorphonuclear neutrophils, 231; small lymphocytes, 50; mononuclears, 7; eosinophils, 4; basophils, 2, and myelocytes, 6.

The Wassermann reaction was negative; the urine and sputum were normal. Roentgenographic examination showed the heart and aorta within their normal limits; the diaphragm was regular. There was definite haziness along the vertebral trunk and the first and second interspaces on the left side, with some thickening throughout the left side of the chest. A lateral view showed some thickening in the posterior mediastinum.

DISCUSSION

DR. O'LEARY: I suggest the possibility of this being the inoculation type of lupus vulgaris, the benign character of the course being due to the bovine type of tubercle bacilli. When possible, complete excision of the primary lesion or point of entry has, in my experience, been advisable.

DR. COLE: I thought that in this case the Dorothy Reed cells could be found in this tissue. The patient actually had the tumors of Hodgkin's disease in the skin, and one could find the Dorothy Reed cells, the eosinophils, the plasma cells and so on; it was a real example of Hodgkin's disease.

DR. PUSEY: Were not the lesions about the mouth rather curious for Hodgkin's disease?

DR. COLE: I thought that that was not a part of the picture.

DR. MICHELSON: One point slightly against the diagnosis of Hodgkin's disease is the duration of six or seven years, which is rather more for tuberculosis. The secretion was full of eosinophils, and could well be from a Hodgkin's gland.

DR. ORMSBY: I do not remember having seen this patient before, but my first impression was that the condition was scrofuloderma. On further study, I concluded that it was a case of Hodgkin's disease, but clinically it resembles scrofuloderma closely.

DR. OLIVER: I was glad to hear the discussion from Dr. Cole particularly, as he reported a group of these cases. This case is a replica of one of his. Our pathologist at St. Luke's Hospital reports that the gland is definitely that of Hodgkin's disease. We have not yet obtained a section from the skin but hope to do so.

HANSEN'S DISEASE (SPEDALSKHED). Presented by DR. OLIVER and DR. FINNERUD.

A Mexican, aged 30, entered Cook County Hospital on Nov. 6, 1928, complaining of a hemorrhagic nasal discharge that had been present for six months, falling of the eyebrows and lashes and a skin eruption of eight months duration. He said that he felt well prior to the appearance of the rather generalized cutaneous eruption of erythematous, scaling patches, irregular in shape and varying in size from that of a quarter to that of a half dollar. There were also a few bullous lesions. The other symptoms appeared soon afterward, and recently he had noted the development of firm nodules, the size of a pea, on the face, forehead, chin and lobes of the ears. The ulnar nerves were enlarged, and he said that he had some sensation of numbness in the extremities. Hansen's bacilli had been found in large numbers in the nasal smear. The patient said that a brother and a cousin had died of this disease.

DISCUSSION

DR. MICHELSON: I wish to know if any of the members have had any experience similar to this. We had a Mexican woman as a patient, who had a definite leprosy. Her son, aged 19, has no clinical signs of leprosy but has had repeated positive nasal smears. Is that evidence sufficient to make a positive diagnosis?

DR. ZWICK: Like the patient presented, the majority of lepers coming to our notice in the United States are foreign-born, most frequently, in my experience, natives of Mexico. It is evident from this that the detection of an infection with Hansen's bacillus in the immigrant by the present methods of examination at our frontier is frustrated by the prolonged periods of incubation and latency, which make a quarantine impracticable.

DR. ORMSBY: It is said by the physicians who know the most about this disease that the first lesion occurs in the mucous membrane of the nose. I do not see why this should not be considered as a sign that the leprosy is already going on, particularly in this patient. The patient Dr. Michelson mentioned he said was examined by a rhinologist who was unable to find any ulcer, but notwithstanding that I think it should be classed as leprosy in that subject.

A CASE FOR DIAGNOSIS. Presented by DR. NOMLAND (by invitation).

A white woman, aged 40, the mother of seven children, complained of two distinct skin ailments. The first began about a year before presentation as a small, white, slightly itching patch on the right side of the neck, which had slowly enlarged peripherally. The second began about eight months before presentation as a red, itching dermatitis of the hands, which had since become generalized.

Examination revealed a patch about 8 by 5 cm. on the right side of the base of the neck. It was atrophic, wrinkled, silvery and stood out from the surrounding red, weeping eruption. The remainder of the skin, including that of the face, was involved in an acute, patchy, red dermatitis, which showed some areas of oozing and crusting, and was most marked on the arms and face. There were numerous excoriations on the body and extremities.

A biopsy from the atrophic area on the neck showed the epidermis markedly atrophied in some places, with absence of rete pegs. The papillary and subpapillary regions of the dermis were the sites of a dense, sharply limited infiltrate consisting chiefly of round cells, but with a few plasma cells. The zone between the dermis and epidermis was free of infiltrate. The lower border of the infiltrate was sharply demarcated. There was slight infiltration about the vessels of the deeper cutis. The sweat glands were about normal, showing only slight infiltration of cells about them. No hair follicles were seen in the section. Acid orcein stains showed that the elastic tissue was destroyed in the region of the infiltrate; where the epidermis was most atrophic, and there was little cell infiltrate, the elastic tissue was absent from the upper cutis. In the deeper parts the fibrils ran parallel to the surface and showed some fragmentation and other evidences of degenerative changes.

A CASE FOR DIAGNOSIS. Presented by DR. NOMLAND (by invitation).

A white woman, aged 68, married, was first seen in July, 1927, when she complained of white, itching patches which were first noticed on the neck about eight years previous to presentation, and had spread slowly, to involve the scapular regions and those of the upper part of the chest. Within the last three months lesions had appeared in the lumbosacral region, and were accompanied by marked itching. Her health had always been fairly good.

Examination revealed an eruption consisting of atrophic, white, finely wrinkled areas in the region mentioned. At the border of the patches were atrophic areas with a diameter of only a few millimeters. Over the sacrum the lesions were distinctly elevated, white and papular. In the older patches follicular plugs were prominent.

Six months before presentation, a biopsy from one of the older patches on the scapula showed marked atrophy of the epidermis, with absence of rete pegs. In some places the prickle cell layer was only about four cells wide. There was sclerosis of the connective tissue of the papillary and subpapillary layers, with practically no cell infiltration. A few dilated capillaries without any perivascular infiltrate were seen in the upper dermis. In the deeper cutis there was moderate

perivascular round cell infiltration. The hair follicles and sebaceous glands were apparently normal, with keratosis of the hair follicle openings. The sweat glands showed signs of degeneration and retention cystlike formation. Weigert stains showed that the elastic tissue was practically absent from the papillary and subpapillary regions; in the deeper cutis it was decreased, fragmented and the fibers ran parallel to the surface. Still deeper it was normal, except where it was destroyed by the perivascular infiltrate.

A recent biopsy from a papular lesion gave the same observations, except that there was less atrophy of the epidermis, and the connective and elastic tissues were less changed. There was slightly more cell infiltrate about the blood vessels.

LICHEN PLANUS SCLEROSUS ET ATROPHICUS. Presented by DR. OLIVER and DR. FINNERUD.

A white woman, aged 26, single, entered the Cook County Hospital because of a rough, whitish patch on the right side of the neck, which had persisted for about a year and a half. Its appearance had not changed since it was first noted, except that it had increased considerably in size. Periodic itching was complained of.

Examination revealed a depigmented, atrophic patch extending in a bandlike manner from the margin of the hair behind the right ear almost to the base of the neck. It varied in width and had the texture of fine sand paper. There were several small, depigmented patches at the lower margin of the lesion, and the skin of the entire area was hyperpigmented "due to sunlight treatments."

Histologic sections, made by Dr. Nomland, showed hyperkeratosis, with plugging of the follicles, and marked atrophy of the remainder of the epidermis, the latter being only from two to four cells deep. There was marked vacuolar degeneration of the cells of the basal and prickle cell layers. The elastic tissue of the upper corium was almost completely absent, and the collagenous tissue was markedly atrophic. There was practically no cellular infiltrate.

DISCUSSION

DR. WILE: These three cases are interesting to bring up together, because they bring up the old controversy between white spot disease, localized scleroderma and lichen atrophicus. I think that it possibly could be said that in the first of the cases, that of the woman with the lesion back of the ear on the right side of the neck, the condition is scleroderma. I think that the other two cases could be any one of the three disorders. The fleshy woman may have atrophic lichen planus, or a guttate form of morphea. I think that they are all in that group, but would make a positive diagnosis only in the first case.

DR. NOMLAND: A biopsy was made from the lesion on the side of the neck and it shows fairly marked atrophy in some portions of the epidermis, beneath which the elastic tissue is destroyed. Adjacent to this there is a dense round cell infiltrate sharply bordered at the lower margin. It is almost indistinguishable to my mind from the ordinary cell infiltrate of lichen planus.

In the case of more or less generalized lichen sclerosis et atrophicus biopsies were made from two places, the first from the older lesion on the shoulder. That biopsy showed moderate atrophy and mild cellular infiltrate around the vessels. Within the last few months, she has developed new lesions on the back which are definitely white and papular. A biopsy from this region shows slight atrophy of the epidermis, slight destruction of the elastic tissue of the subpapillary layer and a little more marked cell infiltrate, but neither of them is so marked as that in the first case.

In the case presented by Dr. Oliver there is extreme atrophy of the epidermis with destruction of the elastic tissue in the papillary and subpapillary layers, and slight round cell infiltration around the blood vessels.

DR. ORMSBY: On account of the fact that there has always been so much confusion about these conditions, I thought that it would be interesting to have these cases presented together with the histologic sections. Clinically, I think that

there is no question that the lesion around the ear and on the neck is lichen atrophicus et sclerosis. Apparently all three cases are of the same type, none of them belonging to the morphea group. I think that we can rely on the histologic observations, and if in the future a histologic examination is made we may be able to place the cases more accurately. I believe, as I did before, that practically all of these cases can be put into two groups, lichen planus atrophicus et sclerosis or morphea guttata, but there may be a third group, chronic atrophic lichenoid dermatitis (Scillag). An example of this type was recently described by Wise. I think that there should be no such term as "white spot disease."

LUPUS ERYTHEMATOSUS. Presented by DR. STILLIANS.

A white woman, aged 40, had a cutaneous eruption of eleven years' duration. It began over the right eyebrow and gradually spread to involve the nose, cheeks, right ear and scalp. When first seen, in February, 1928, the lesions were typical of lupus erythematosus.

On March 1, 1928, 50 mg. of gold sodium thiosulphate was given intravenously. The patient developed a severe bronchitis, and the treatment had to be discontinued. On March 29, another dose of 50 mg. was given. On April 5, she received 75 mg., and on April 12, 100 mg. was administered. This dose was repeated at weekly intervals until she had received eight successive doses. At this time the lesions had practically all disappeared, leaving only a slight pigmentation. On October 4, there was a slight recurrence on the left cheek, and the patient had been given three doses of 50 mg. each since then.

DISCUSSION

DR. BROEMAN: In some of these cases that do not yield to a gold compound and sodium thiosulphate, radium can be used in addition, in mild dosage, through a filter, and it will improve the condition a great deal. Radium will reduce the infiltration of lupus erythematosus and cause the lesion to disappear. An average dose would be a 10 mg. radium plaque, 0.3 mm. brass filter, covered with one layer of rubber, applied over the lesion.

DR. CREGOR: I should like to know what local therapy was employed aside from the injections of a gold compound and sodium thiosulphate.

DR. STILLIANS: I think that no local treatment was used, and the condition cleared up rapidly. She is having some recurrences now, and they are of interest because some of them are within the scar.

DR. ORMSBY: We have had a lot of brilliant results in the treatment for lupus erythematosus with gold sodium thiosulphate, but sufficient time has now elapsed so that we are seeing recurrences. I wonder if others are having the same experience. A few patients are now returning with recurrences, after the conditions have been entirely cleared up.

DR. GOECKERMAN: We are beginning to have the same experience, but I was never as enthusiastic as some others about this therapy. I think that we never had more than a 50 per cent satisfactory result, and even among these we are now gradually beginning to hear of recurrences.

DR. KLAUDER: We treat our patients for some time after the disappearance of the lesions in the hope that such treatment will prevent a recurrence.

A CASE FOR DIAGNOSIS. Presented by DR. NOMLAND (by invitation).

A man, aged 60, had a cutaneous disorder of six years' duration. It was said to have started with an itching pimple, which slowly enlarged, and was diagnosed and treated as eczema, with no result. There had always been crusting and moderate itching. When presented at the December meeting of the Chicago Dermatological Society, examination showed a crusted, weeping, erythematous patch, extending from just inside the hair line on the mastoid region to about the

angle of the jaw. The margin was sharply demarcated, but there was nothing suggesting a pearly or a nodular border. There was slight scarring and barely perceptible induration in the center of this area, which was 10 by 6 cm.

Since that time he had received considerable roentgenotherapy, with a change in the clinical picture. The lesion was drier, the borders were less clear and the central infiltration was more obvious.

Biopsy revealed crusting and parakeratosis of the epidermis. In the dermis were several nests of darkly staining cells of the basal cell type, which could be seen to arise in several places from the basal cell layer. There was moderate cellular infiltration about these nests, consisting principally of plasma cells.

MULTIPLE EPITHELIOMATOSIS. Presented by DR. ORMSBY.

A man, aged 55, had a cutaneous disorder of seven years' duration. In July, 1928, there were numerous lesions on the trunk, both anteriorly and posteriorly, and on the shoulders. Over the left shoulder was an oval area, 3 by 5 cm., which presented a fine, rolled, pearly border. The center was red, scaly and atrophic, and throughout the area were several small nodules. On the right breast was a lesion 2 by 3.5 cm., which presented a similar border and center, but which contained no nodules. Several similar but smaller lesions were present in the areas noted.

Biopsy from one of the lesions of the shoulder proved it to be a basal cell epithelioma.

MULTIPLE EPITHELIOMATOSIS. Presented by DR. ORMSBY.

A man, aged 61, was first seen in January, 1924, when the cutaneous disorder was of one year's duration, and eight or ten lesions were present on the trunk, anteriorly and posteriorly. They varied in size from that of a split pea to that of a dollar. Over the sternum was a lesion the size of a dollar, consisting of a red, slightly infiltrated, scaling and crusted area surrounded by a fine, rolled, elevated edge. Treatment with carbon dioxide snow had caused the major portion of the lesions to disappear. The chief one remaining was a crusted, slightly red, infiltrated patch, the size of a dollar, which resembled seborrheic dermatitis. There was no rolled margin.

DISCUSSION

DR. ORMSBY: Because of so much discussion on this subject and difference of opinion and particularly because of the bringing in of Bowen's precancerous dermatosis, I thought that it might be well to have these three patients presented as they all have the superficial type of epitheliomatosis, and yet present different clinical appearances. The first patient had a patch of dermatitis-like eczema, a crusted, scaling patch, but well defined and slightly edematous. I first saw him in the clinic and demonstrated his case as an example of superficial epitheliomatosis (basal cell epithelioma). The other two were private patients. The lesion on the chest of the second patient presents the appearance of seborrheic dermatitis, but when I saw him first there was a typical elevated margin and the center of the patch was scaling. He had several other lesions, which have all cleared up under refrigeration with carbon dioxide snow. In the third case there was a large patch with a classic, threadlike margin, with a red, scaling center together with several papules scattered over the surface. The lesion was neither moist nor crusted. The entire patch was excised and proved to be a typical basal cell epithelioma. The fact that these cases present the clinical appearance of psoriasis and eczema but persist in the same limited areas should keep one on the alert looking for them. I feel sure that many are not recognized, and that all the cases belong together. We have been calling them superficial epitheliomatosis to distinguish them from ordinary epitheliomas. The ones with crusted lesions are occasionally of the prickle cell type which metastasize and end fatally.

DR. ZWICK: May I venture the suggestion (to be rejected or accepted by Dr. Ormsby on further observation) that the second and the third of this remarkable series of cases present features which are found in the dyskeratoses of the type of Paget's disease.

In its clinical aspect the second case of the series is analogous to the other two. After reading the histologic observations, however, especially the description of the conservation of the intact basal membrane, I am more inclined to consider the diagnosis of the type of epithelioma, which, because of its clinical analogy to Paget's disease, has been called pagetoid epithelioma.

DR. GRINDON: Most of us have read Pautrier's article, which was informative. I shall not go into a discussion of Bowen's precancerous epithelioma and the other types, but in the light of Pautrier's article, and that of Wise, we should stop speaking of these conditions as precancerous Paget's, extramammary Paget's disease, and so on. There is no such thing as extramammary Paget's disease. The thing we should take home, and disseminate among the men of our acquaintance, is that there is no good reason for calling any of these things benign. Most of them pursue a benign course for a long time, but they may change at any time. I recently had under observation a typical erythematoid multiple epithelioma. After a time the patient developed a tumor of the brain and died.

SPOROTRICHOSIS (LOCALIZED, LYMPHANGITIC TYPE). Presented by DR. CLEVELAND WHITE.

A white man, aged 48, a laborer, said that he had an infection of the left forearm, which manifested itself about six days after he noticed a small, tender area on the ball of the left thumb, and which persisted for ten weeks. At that time he was working in a nursery and distinctly remembered handling barberry bushes, but did not recall any injury.

Examination showed an indolent, superficial ulceration on the ball of the thumb at the site of the primary inoculation. A string of some twenty-five subcutaneous gummas were present along the forearm and arm; the chief, draining lymphatic was hard, cordlike and easily palpable. The gummas varied in size from that of a pea to that of a walnut, the smaller ones being hard, while the larger nodes were bluish red with central softening. General physical examination was negative, excepting for several suggestive small nodules on the skin of the thorax. A roentgenogram of the chest was negative. The Wassermann reaction of the blood was reported negative.

A striking feature of the case was the comparative ease with which Dr. T. K. Lawless had found the organisms microscopically in material aspirated from several nodules. They appeared as oval bodies, many with buds, after being stained with Pappenheim's solution. Pure cultures were easily discernible on the fourth day in Sabouraud's isolation mediums.

DISCUSSION

DR. H. R. FOERSTER: Dr. White is to be complimented on the excellent microscopic preparations, and also on the presentation of an interesting case. I think that it is worth while to call attention again to the fact that the majority of cases of sporotrichosis seen in this country are of the localized lymphangitic type as demonstrated in this case. This may indicate a definite strain of sporothrix peculiar to our climate or our soil. An interesting point in the etiology is the probable infection from the barberry shrub, an apparently common carrier of the sporothrix.

DR. CREGOR: I wish to call attention to the advisability of immediately making micoscopic examination in these cases. Only within the last few weeks we have been able to confirm clinical diagnosis by the microscopic examination of smears.

DR. WHITE: While the clinical diagnosis was easy and the cultures were typical, the striking thing was that Dr. Lawless recovered the organism in the fresh smear. Lawless' original work in demonstrating the sporotrichotic conidia

in the aspirated pus from lesions is noteworthy. They appear as refractive round bodies about one-tenth the size of a red blood corpuscle. Small buds soon appear on these sporelike bodies from which its future hyphol threads develop if the organism comes in contact with the air; otherwise, they remain as anlage of future conidia.

NEVUS UNIUS LATERALIS. Presented by DR. OLIVER.

A girl, aged 21 months, had a cutaneous eruption which was first noticed when she was a few days old. At that time, according to the mother's statements, there were many vesicles on the arm and lower leg. At the time of presentation she showed a rough, dry, linear, papillomatous lesion, extending down the left arm and leg, and present to some extent on the left side of the chest and abdomen. There was a slight eruption of this character on the right lower leg. On both lower legs there were a few papulovesicles, the size of a pinhead.

DISCUSSION

DR. MOOK: I think that this case belongs in the group of nevus unius lateralis.

DR. GRINDON: As Dr. Mook said, the lesions on the left side of the chest resembled those of nevus unius lateralis. There was a patch of the same sort in the left groin and, I think, one in the axilla. There were also smaller lesions on the left thigh and leg. These had evidently been the sites recently of some inflammatory process. The mother said that they had looked like "water blisters." There was scar tissue about the lesions on the left thigh and leg, with papules in between. I am at a loss as to how to reconcile these features.

DR. COLE: I was much interested in this case and believe it to be one of the cases along the line that has been reported by different physicians in the clinics of Brocq and Jadassohn. The group is somewhat mixed; some of the cases will have the frank picture of an epidermolysis bullosa; others will resemble a familial keratodermia of the palms and soles, and still others will come into a group, and I believe the patient belongs in that group, of the congenital ichthyosiform erythrodermias described by Brocq. Some of these patients have lesions accompanied by bullae, and other ones without bullae.

DR. OLIVER: I agree with everything that has been said. Dr. Senear and I saw the patient about three weeks ago and told the mother that the condition was congenital. Today she said that a few days after the child was born, it developed these small papules and papulovesicular lesions, which were diagnosed impetigo and treated as that disorder, with no improvement. Some of the lesions have dried up under the application of a lotion of lime water. I think that it is an unusual type of nevus unius lateralis.

URTICARIA PIGMENTOSA. Presented by DR. OLIVER.

A woman, aged 63, presented an eruption of thirteen years' duration, which had always been accompanied by severe neuralgic pains in the head. The attacks occurred in severe paroxysms every three months, and lasted for three weeks or more. The eruption troubled her very little, although there was slight itching when the lesions were irritated.

The eruption extended from the level of the neck in front and the scapulae behind down over the chest, back, abdomen, inner aspects of the legs and the back of the arms. The lesions were coppery brown papules, varying in size from that of a pinhead to that of a pea; they were slightly raised above the level of the skin and when rubbed would urticate.

URTICARIA PIGMENTOSA. Presented by DR. OLIVER.

A girl, aged 3½ years, had an eruption which appeared when she was 4 days old. There were no subjective symptoms except when the lesions were irritated. Roentgenograms showed that the thymus gland was normal.

The lesions were xanthelasmoid, yellowish-brown macules, varying in size from that of a pea to that of a quarter, some round, others oval, which were present over the entire surface of the body including the face. Those on the face were much lighter than the ones on the body.

DISCUSSION

DR. GRINDON: I suppose we all agree that the disorder in the child is urticaria pigmentosa.

Whether the severe headaches of which the woman complains have anything to do with the dermatitis, I do not know. Dr. Weiss called my attention to the fact that on rubbing the lesions they came up in an urticarial fashion. There was some pigmentation, although not marked. Although she is past 60, and the disorder appeared when she was 47, which does not fit in with the usual picture of urticaria pigmentosa, I do not see that we can put it anywhere else. There were mast cells in the section shown.

DR. WILE: I wonder whether the case of the child is not unusual in the enormous size of the pigmented lesions. I have never before seen a patient with patches as large as these. They are almost the size of a dollar and remind one more of the pigmentation seen in Recklinghausen's disease.

If it had not been for the history the mother gave, that the lesions occasionally come out as urticarial wheals, I am inclined to think that one could well doubt from the appearance of the case that it is urticaria pigmentosa.

DR. MITCHELL: I am sure you will all remember the work of Dr. Michael's on the use of roentgenotherapy in the cases of acquired type. I have had an opportunity to treat the condition of a woman by that method and the lesions treated have disappeared, but they may recur as did those of Michael. It will be interesting to see if they recur in these cases.

DR. OLIVER: I should like some information about the first of these patients, the elderly woman. She came here with the idea that something might be suggested to help the headaches. She has been examined by Dr. Peter Bassoe, an excellent neurologist, who thinks that there is some connection between the severe headaches and the urticaria pigmentosa.

In the case of the child, I questioned the diagnosis, but as I recall the lesions appeared early in life. The child has received no medication such as phenolphthalein. The case resembles one shown by Dr. Hollander three years ago in Pittsburgh. With the idea that the child might have a persistent thymus, which would account for the condition, I had a roentgenogram of the chest made, but nothing was found. The eruption on the face is a good deal lighter than that on the body.

DR. WEISS: In connection with the headaches in the first case, it appears to me that the history is rather typical of migraine, and a number of these cases have been traced to protein sensitization. The urticaria suggests protein sensitization, and it might be well to investigate the case from that standpoint.

DR. FINNERUD: I think that it is unusual to see as many mast cells as are present in this case. In the first sections from the block there were none found, but in the sections from the center of the block they were present in large numbers. This may account for the fact that so many cases are reported with complete or almost complete absence of mast cells.

DR. PUSEY: In regard to Dr. Wile's remarks about the size of the lesions, I think that this illustrates how opinions are affected by accidental circumstances. When I first saw this child I was struck with the similarity of the condition to the first case of urticaria pigmentosa I ever saw, and this has always been the typical picture in my mind, although I think I have not seen many cases like it since.

ATYPICAL PEMPHIGUS. Presented by DR. ORMSBY.

This patient, a man, aged 46, was the first described with a symptom-complex which has since been accepted as an entity. The disorder is characterized by

lupus erythematosus-like lesions on the face, with seborrheic dermatitis-like lesions, together with bullae on the trunk. In 1918, when first seen, a thorough general examination revealed no pathologic changes. During the eleven years some treatment had been employed each year. At times there had been but slight activity and only several exacerbations had occured (Senear and Usher: ARCH. DERMAT. & SYPH. **13**:761 [June] 1926).

DISCUSSION

DR. ZEISLER: I wish to ask Dr. Ormsby whether these conditions respond to the use of gold sodium thiosulphate. I think that in these cases, with the benign course simulating erythematous lupus, it is justifiable to try this therapy.

DR. ORMSBY: We have treated this patient with the idea that he had pemphigus, and have used the various methods we employ for that disorder. We have not tried gold sodium thiosulphate. He has had several series of the Davis therapy. Professor Bloch saw the patient a few months ago and said that he thought it was a case of pemphigus but an entity differing from ordinary pemphigus. This patient is the original case of this type to be shown and recorded.

DR. SENEAR: This is, as Dr. Ormsby said, the first case of this type that was shown but he has had a large number whereas I have seen only two. Briefly, the picture is as indicated here, one of lupus erythematosus-like character on the face; on the body the lesions are sometimes distinctly bullous, sometimes keratotic, of the seborrheic type. The outstanding feature is the evanescent appearance of the lesions on the face, where the entire type will change rapidly, and the skin of the entire face may become involved over night.

Answering Dr. Zeisler's question, in connection with this particular type the lesions are benign in most instances, but in several the picture has changed to the usual type, run a rapid course and had a fatal termination, with a pemphigus eruption and a death from pemphigus.

DR. GRINDON: One of the patients whose case was reported by Dr. Senear was later under my care at the St. Louis City Hospital, and still later at the St. Louis Infirmary. The condition was at first apparently a typical lupus erythematosus and was so diagnosed by the dermatologist who first saw her in St. Louis. After a time bullous lesions developed and the case became much like one of chronic pemphigus. Later, when I saw her, she had pemphigus of a type I had never before seen. It was, and still is, like pemphigus foliaceus, except that the lesions do not cover the entire surface with thin pastry-like crusts, but are arranged about the arms and other parts of the surface in peculiar gyrate lines, making all sorts of bizarre designs. A photograph illustrating this was shown at the last meeting. When I last heard, the patient was still living, but the condition had remained severe throughout. I should not call it benign in any sense.

DR. ORMSBY: This case is not particularly interesting except to show the result of treatment with gold sodium thiosulphate. The original picture was that of lupus erythematosus combined with miliary lupus. The miliary nodules were never distinct except under diascopic pressure. I am satisfied that the condition here is tuberculous, and the lesions cleared up under gold sodium thiosulphate therapy after the disorder had resisted other methods.

These cases are not called benign pemphigus but atypical pemphigus, but they usually run a benign course.

TUBERCULOSIS CUTIS (RESEMBLING LUPUS ERYTHEMATODES [LELOIR] AND MILIARY LUPUS). Presented by DR. ORMSBY.

A girl, aged 13, had a disorder of five years' duration. When first seen, in October, 1927, her mother said that the patient had always been "sickly" and had enlarged cervical glands when a small child. The first lesion appeared on the left ear, and after about one year the nose and contiguous areas over both cheeks became involved, and more recently the lobe of the right ear.

Examination at that time showed lesions consisting of variously sized patches of dermatitis. The entire end of the nose was dull red and was covered with scales, and on diascopic pressure small brown nodules were revealed. Many discrete, small, red papules were scattered over the nose and cheeks, and there were patches over the zygomas and ears which presented atrophic centers, with slightly raised, reddish borders, which resembled the lesions of lupus erythematosus.

General tonic treatment with local applications brought about some improvement during a period of eight months. Fifteen injections of gold sodium thiosulphate were given during the next four months, which completely cleared the disorder.

A Case for Diagnosis. Presented by Dr. Ormsby.

A woman, aged 44, had a disorder of nine years' duration. When first seen in 1920, there was erythema and some telangiectasia on both cheeks and the forehead, also moderate scaling. Subsequently, numerous punctate, atrophic lesions developed. No subjective symptoms had ever been present, and when presented only the atrophy and telangiectasia remained. Much local and a moderate amount of internal treatment had been employed.

DISCUSSION

Dr. Michelson: I consider this case to be a telangiectatic form of lupus erythematosus. The reticular arrangement, the atrophic appearing center and the location are in favor of that diagnosis.

Dr. Pusey: This case interested me very much, and I was like Dr. Michelson in thinking of it as a case of Crocker's type of telangiectatic lupus erythematosus.

Dr. Klauder: I thought that it was the type of telangiectasia one sees so commonly in patients in the English skin clinics as well as among pedestrians in England. Many such patients are sensitized to light. It may be a coincidence that this patient's grandparents were born in England and that, from her statements, she is sensitized to light. It is thought by some that heredity plays a rôle in the causation of telangiectasia in British subjects. The patient's grandparents were related. It is interesting to correlate this with the photosensitivity and to associate it with the consanguinity of parents of patients with xeroderma pigmentosa.

This brings up the importance of eugenics in its application to diseases of the skin.

Dr. Pusey: I think that another important thing is the atrophy that follows.

Dr. Ormsby: The suggestion of telangiectatic lupus erythematosus (Crocker) is an excellent one. I have had the patient under observation for several years, and during the last year she has been given gold sodium thiosulphate with good results. The active process has disappeared, and there is nothing left but atrophy and telangiectasia.

Acrodermatitis Chronica Atrophicans (Resembling Poikiloderma Vasculare Atrophicans). Presented by Dr. Ormsby.

A woman, aged 49, who was born in Russian Poland, had been in the United States for twenty-two years. The cutaneous disorder was said to have begun on the anterior surface of the knees thirty-six years prior to presentation, and gradually spread upward to involve the thighs, trunk and upper extremities during a period of five years. Recurring nodular lesions were described. When first examined, in December, 1927, the skin was dry, scaling, wrinkled and in areas telangiectatic. On the face the process was more inflammatory. Several coin-sized infiltrated plaques were present on the knees and legs. The atrophy and telangiectasia were most marked over the breasts, extensor surface of the arms, buttocks and thighs. In October, 1928, a general examination revealed no abnormal observations.

Biopsy obtained at that time was described by Dr. Finnerud as follows: There was dense cellular infiltration of the upper third of the corium, composed chiefly

of lymphocytes, most dense around the mouths of the follicles; sharply defined and also markedly dilated blood vessels were seen in the upper corium. There was destruction of the elastic tissue and of some of the collagenous tissue of the upper portion of the corium, chiefly at the site of the cellular infiltration. and obliteration of the rete pegs. The epidermis was definitely thinned in some areas. (For complete clinical description see ARCH. DERMAT. & SYPH. **18**:304 [Aug.] 1928).

DISCUSSION

DR. COLE: We have had a patient under observation for the last three or four years who gave a history of having worked for the Standard Oil Company, where he developed a dermatitis. The condition kept flaring up from time to time and he would come in with more or less generalized dermatitis, which would heal under the use of emollients; he would then go to work and it would flare up again. It looked much like this case. He likewise showed telangiectasia and areas of atrophy, possibly a little more suggestion at times of areas that resembled slightly lichen planus annularis with atrophy. We followed the case, and on taking a biopsy were surprised to get a picture that would go with lichen planus. My diagnosis would be lichen planus atrophicus et annularis. I realize that the case looks much like poikiloderma, but the histologic picture would not be against the diagnosis of lichen planus.

DR. MOOK: Lichen planus takes on so many different forms that one must really observe patients over a considerable time in some cases in order to arrive at a diagnosis. Some of the lesions on the upper part of the chest and supraclavicular space greatly resembled lichen planus. Regarding the histology, the only thing against a diagnosis of lichen planus was that the epidermis was flat, not thin and there was no marked acanthosis such as one sees in lichen planus.

DR. FINNERUD: The epidermis is definitely thinned in some places, and the elastic tissue apparently is diminished in the papillary portion of the corium. If this could be fitted in with lichen planus it would have to be the atrophic form. I think that it would be unusual to have this amount of what apparently is telangiectasia in connection with lichen planus, although the infiltrate is sharp and of lichen planus type.

DR. FOERSTER: Poikiloderma was the diagnosis considered when this patient was first presented by Dr. Ormsby some months ago. At that time I thought it was not an example of poikiloderma, chiefly because of the entire absence of pigmentation which has always been an important feature of the undisputed cases of poikiloderma. I wish to offer this suggestion as to diagnosis: May this not be a transitional condition occurring in the group of chronic resistant scaling erythrodermas, with atrophy, between the rare disorder of lichen variegatus of Crocker (or parakeratosis variegata) and the relatively common disseminate patchy erythroderma of Brocq? The patient's eruption is composed largely of a combination of fused and flattened papules arranged in more or less ring-shape or retiform manner on the breasts and extending over the anterior folds of both axillae to the shoulders, with atrophy and telangiectasia in most of the areas enclosed within the network, a feature described by Pautrier as occurring in lichen variegatus, and of a more extensive patchy and scaly erythroderma-like condition.

DR. ORMSBY: I had the privilege of studying a case of poikiloderma for some years, and the diagnosis in that case was made by Dr. Foerster. That patient had several areas resembling healed radiodermatitis on the body, and a characteristic feature was pigmentation. The areas were distinct here and there on the body, not a diffuse involvement as in this case. Lymphosarcomatosis developed in that patient, which terminated fatally. There appeared to be no connection between the neoplasm and the cutaneous disorder. After considerable observation of this present case and that one I believe that this case is not one of poikiloderma. I have seen several cases of acrodermatitis chronica atrophicans with the smoky-red hue in the lesions on the arms, hands and knees. This patient has typical lesions of this

type on the back and over the shoulders. When we recall the many years' duration, the nodular lesions, the atrophy and telangiectasia, the dull red smoky hue, the absence of pigmentation together with the histologic picture, we are probably justified in concluding that the disorder is acrodermatitis chronica atrophicans. Therefore, I believe that we should put the case in that category until it has been proved something else. We have had the patient in the hospital long enough to demonstrate that there is no pathologic condition other than that seen in the skin.

A Case for Diagnosis. Presented by Dr. Foerster and Dr. Wieder.

C. Z., a white man, aged 33, a grocery clerk, presented himself on Dec. 26, 1928, because of a generalized eruption of three weeks' duration. He gave a history of a similar attack of about one month's duration four months previously. Also, of what apparently was an acute nephritis thirteen years before presentation, with intense edema of the buttocks, abdomen and lower extremities, and of a tonsillectomy eight years prior to presentation. His past history was otherwise negative.

The present eruption was described as having begun with grouped inflammatory lesions in the lumbar area of the spine and over the chest. This was followed by a croplike eruption of individual lesions somewhat symmetrically placed on the trunk, extremities and occipital areas of the scalp. The individual lesions were described as "pimples with hard centers," which became pustular and exudative. There was moderate pruritus, and rubbing greatly intensified the inflammatory reaction. The individual lesions involuted after about one week. No lesions of the mucous membrane had been observed.

Examination showed symmetrically placed, isolated and grouped inflammatory lesions and pigmentary remains of former lesions. The sites of predilection were the occipital, interscapular, lower thoracic, lumbar and ilio-inguinal regions. The upper extremities, buttocks and thighs showed a sparse distribution of lesions. The earliest lesions appeared to be solitary, intracutaneous, inflammatory papules, the size of BB shot, which later appeared capped with vesicles or vesiculopustules. Older lesions were flat-topped, inflammatory, exudative papules, varying in size from that of a split pea to that of a bean, associated with intense pigmentation. The exudation was serous in some lesions, purulent in others. Where involution had taken place there was central depigmentation, with pronounced peripheral hyperpigmentation, and apparent rather than real central atrophy. The skin also showed generalized striae atrophicae referable to the edema mentioned.

A differential blood count showed: leukocytes, 10,800; polymorphonuclear neutrophils, 70 per cent; eosinophils, 5 per cent; basophils, 1 per cent; small lymphocytes, 12 per cent; large lymphocytes, 5 per cent, and mononuclears, 7 per cent. The Wassermann reaction was negative, and urinalysis gave negative results throughout, including iodine and bromine tests.

DISCUSSION

Dr. Michelson: I have no diagnosis to offer, but a suggestion. The initial lesion is said to have been a small papule with a smaller pustule on the forearm. The patient told me that the lesions on the legs had been similar. There was a deep infiltrate about the sweat glands, and I was immediately struck by the fact that this resembled a bathing beach dermatitis studied last summer, the cases of which were due to the larval form of a flux. I was impressed with the similarity of the histologic picture here.

Dr. Wile: I have seen a case precisely like this and hope to have the pleasure of demonstrating that patient at the meeting in February. Several years ago Werther described, in the *Iconographie*, a pustular disease followed by scars somewhat like those of syphilis, with a rather characteristic microscopic picture, a disease of great chronicity, and to it he gave the name of "dermatitis nodularis necrotica." We have had a little girl under observation for two years whose disorder we were unable to diagnose until we found Werther's description, also a case of Klingmuller. The lesions are precisely like the ones in this case, and I

hope to report the case soon, which will establish another of the three or four cases on record. The cases always occur with the hemorrhagic pustules looking sometimes like lesions of angiokeratoma, small hemorrhagic blisters, which appear all over the body, produce excessive scarring and atrophy, and are unlike any picture I have ever seen before. When Dr. Otto Foerster saw my patient two years ago with me, we were puzzled as to its nature. Two or three other cases have been reported in which a diagnosis of dermatitis nodularis necrotica was made and in which the nodules were subsequently found to be tuberculids. I think that this case is probably one of dermatitis nodularis necrotica.

DR. STILLIANS: I was impressed by the resemblance of this case to one we had at the Cook County Hospital which Dr. Fred Harris diagnosed as dermatitis nodularis necrotica.

CASE FOR DIAGNOSIS (ICHTHYOSIS HYSTRIX?). Presented by DR. SENEAR and DR. WIEN.

C. A., a negro boy, aged 9, had an eruption that began behind the ears when he was 6 months old, spreading to the head, face and later to the extremities. The face had been free from the disorder since the latter became generalized.

Examination revealed scaling, crusted, lichenified and verrucous patches, varying in size from that of a coin to that of a palm, on the extensor surface of the upper extremities, the buttocks and the extensor and flexor surface of the lower extremities. A roentgenogram of the chest showed evidences of an old hilar tuberculosis, with some parenchymal involvement of the upper lobes of the lungs.

The patient was presented at the May, 1928, meeting of the Chicago Dermatological Society, and a diagnosis of verrucous tuberculosis was suggested. Since that time he had received general ultraviolet light baths, with marked improvement.

DISCUSSION

DR. LIEBERTHAL: The clinical picture and the numerous lesions, first of all, do not show the appearance of tuberculosis verrucosa cutis, and the histologic sections do not give any details of that disorder. Both support the diagnosis of ichthyosis hystrix.

DR. WEISS: When I first looked at this patient I thought a diagnosis of tuberculosis verrucosa cutis was probably correct, but Dr. Mook called my attention to different features of the eruption which caused me to change my opinion, and I think that the case likely will turn out to be congenital ichthyosiform erythroderma. The fact that he has a symmetrical eruption of the ichthyosis hystrix type is in conformity with that idea. I have not seen a congenital ichthyosiform erythroderma in a negro, but I see no reason why it should not occur.

DR. SENEAR: The patient was not presented with a diagnosis of tuberculosis verrucosa cutis, but as a case for diagnosis. When presented several months ago, it was the almost unanimous opinion of those present that he had that disorder. Histologic sections showed no tuberculosis, and the boy was presented today to disprove that diagnosis. I think that the diagnosis of ichthyosis hystrix is probably correct.

DR. MOOK: In negroes a skin eruption may be brown, black or any color. We frequently have the secondary macular eruption of syphilis in the negro which is gray, brown or almost white. When white, it is caused by the slight exfoliation of the horny layer over the macular patches of syphilis, so that when they take their clothes off they look as if they had been dabbed with petrolatum and a white powder sprinkled over it.

A CASE FOR DIAGNOSIS. Presented by DR. FINNERUD.

A white boy, aged 16, had a disorder of about three years' duration. It was said to have begun as a pimple on the left ear, which had slowly enlarged.

Examination showed a globular lesion, the size of a hazelnut, suggesting a semiliquid content, on the lobe of the left ear. It was reddish brown, with a few yellow puncta. There was a history of discharge from the ear just previous to the onset of the trouble.

A biopsy report by Dr. Nomland stated that beneath the epidermis were various sized cysts the walls of which were made up of atrophied epidermis. These probably were the sites of the calcareous nodules that were seen macroscopically. The epidermis was practically unchanged, excepting where it was atrophied, apparently by the underlying cell infiltrate. There was a variegated cell infiltrate, limited principally to the upper and middle cutis, and consisting of more or less discrete islands of cells, which in some places were chiefly lymphocytes, in others almost pure epithelioid, and in a few places showed a few giant cells. There was no typical tubercle formation about the giant cells or in any other location. There was one small area of caseation necrosis in the center of a nest of epithelioid cells deep in the cutis.

DISCUSSION

DR. FINNERUD: The histologic sections are more like those of sarcoid than those of lupus vulgaris. The patient was shown merely because of the interesting histologic picture.

DR. PUSEY: In a similar case of mine the section was full of tubercle bacilli.

DR. O'LEARY: I believe that this patient belongs in the lymphoblastoma group and my guess, at this time, is that it is probably of the Hodgkin's type. Attention has recently been called to the fact that patients with this type of dermatoses, on whom a diagnosis of Hodgkin's disease was made during life, at autopsy were found to have what is now called mycosis fungoides. I believe that it is necessary to emphasize repeatedly the transient character of this group of dermatoses.

NODULAR ERYTHEMA—INDURATUM-LIKE SARCOID OF THE EXTREMITIES. Presented by DR. PUSEY and DR. WEBER.

An American housewife, aged 43, had erythematous patches on the lower half of the extensor surfaces of the legs.

The onset was gradual, about two years before presentation. Seasonal changes in the lesions had not been observed. Subjective symptoms had been negative.

Examination showed reddish infiltrated patches, varying in size from that of a dime to that of a half dollar; several of the largest had coalesced. Most of the nodules had a slight amount of induration. The borders of the nodules were slightly elevated in places.

DISCUSSION

DR. WEBER: I should like to hear Dr. Sweitzer's opinion. In a recent article he stated that these cases were the same as erythema induratum.

DR. SWEITZER: I could not diagnose the condition in this case.

CASE FOR DIAGNOSIS. Presented by DR. SENEAR and DR. WIEN.

T. C., a male, aged 59, was first seen on Sept. 13, 1927, with a generalized eruption that began about fifteen months before. The first lesion was noted on the flexor of the right wrist as a group of pustules that gradually spread up the arm and later involved the shoulders, then the left arm, and within the next month became generalized. Subjective sensations were slight. The first attack was of three months' duration, and the patient then was free from eruption, but in the next few months there was a recurrence which was associated with a diffuse mild scaling of the skin that was generalized. Since that time the patient had never been entirely free from involvement, and although there were intervals of improvement, the picture in general had been the same during the entire period of observation.

The patient presented the picture of an acute generalized exfoliation, superimposed on which were scattered waxy scales and crusts particularly about the

hands and feet, and occasionally groups of pustules could be seen on the palms, soles and elsewhere. There was a deforming arthritis of the hands with atrophy of the nails. General physical examination was essentially negative. The Wassermann reaction of the blood was negative. There was a moderate leukocytosis. Cultures from the pustules revealed *Staphylococcus pyogenes aureus*. There had been no response to varied local and general therapy.

DISCUSSION

DR. COLE: I have seen this disorder at times when it does not show the same phase as at present.

DR. SENEAR: This patient has had, as the history indicated, recurrent attacks of this type. After the first one he was entirely free from eruption for several months, and then had recurrences. When he came to us more than a year ago he had a rather generalized exfoliative dermatitis, but the most striking feature of the eruption was present on the thighs where there was practically no exfoliation, and he showed there as well as on the legs numerous groups of small pustules. The tips of the fingers showed the same condition. We have had the patient on almost every conceivable rational type of therapy, and on some that were perhaps irrational, and the condition progressed slowly and steadily until about three weeks ago, when he was practically free from eruption except for the hands, feet and lower half of the legs. Recently he developed an infection of the upper respiratory tract and during that the eruption returned to almost its former intensity. The overshadowing thing is the grouped pustular type of eruption. We have considered exfoliative dermatitis, psoriasis of the type associated with arthritis, the gonorrheal arthritis associated with some peculiar skin change, and, lastly, have thought of it as falling in the group of chronic suppurative dermatitis described by Hallopeau. The patient was presented for diagnosis.

DR. WILE: Is the type of arthritis thought to be that of gonorrheal origin? The changes in the nails are like those of psoriasis.

DR. SCHMIDT: This patient was under my observation two years ago, and the striking feature then was the degree of pustulation which was present on the skin. I thought it was some sort of dermatitis perstans of the Hallopeau type.

EPITHELIOMA. Presented by DR. SIMPSON and DR. FLESHER.

Seven patients with epithelioma of the lip, tongue and mouth, and two patients with angioma of the face, who had been treated by means of radium, were presented. Clinically, all appeared well.

PARAPSORIASIS. Presented by DR. ORMSBY.

A man, aged 47, presented a disorder of three years' duration which began on the arms, spreading to involve the covered parts of the body. Itching was complained of. Examination of the blood revealed no abnormalities.

The lesions consisted of large and small coin-sized yellowish, slightly scaly macules.

KERION. Presented by DR. OLIVER and DR. FINNERUD.

A woman, aged 47, entered Cook County Hospital ten days before, complaining of a tumor of the scalp. She said that three and one-half weeks before presentation, while washing her scalp, she accidentally scratched herself. A small area of infection resulted and several days later she noted its tendency to a tumor-like development. This had continued to develop rapidly ever since.

Before the patient entered the hospital, a physician incised the lesion and removed considerable pus and blood.

NEW YORK DERMATOLOGICAL SOCIETY

PAUL E. BECHET, M.D., *Secretary*

Regular Meetings, Jan. 22 and Feb. 26, 1929

HOWARD FOX, M.D., *President*

BROMODERMA. Presented by DR. ELLER.

H. D., a man, aged 36, born in the United States, was first seen in the Post-Graduate Skin Clinic Jan. 7, 1929. He had had an eruption for eight years.

On the right thigh were several bluish nodules each the size of a dollar, some of which were vegetative. A number had healed, leaving large, flat, bluish scars with velvet-like skin. Other similar nodules were present on the anterior aspect of the legs. The patient had been taking bromides for fourteen years. The Wassermann test was negative.

DISCUSSION

DR. WILLIAMS: Unless the lesions heal with the omission of bromide and the use of salt, I should like to know the result of mixed treatment. The scars look much like syphilitic scars.

DR. WHITEHOUSE: I agree with the diagnosis. We have had many such patients with large tumors on the lower part of the legs. Phenobarbital does better in many cases of epilepsy than bromide. I should recommend that as a substitute for the bromide in this case.

DR. MACKEE: I think it is bromoderma, but some of the eruption is probably acne vulgaris. I agree with Dr. Whitehouse as to phenobarbital; but if bromide is to be given, it might be combined with sodium chloride by mouth. There are numerous cases on record showing the possibility of administering bromide to idiosyncratic persons, provided sodium chloride is given by mouth. The urine of the patient should be examined for bromide.

DR. THRONE: At one of the meetings last winter, Dr. MacKee showed a patient who had been treated for this condition with sodium chloride administered by mouth. Since that time, I have tried this form of administration of salt in cases of this kind and have found it to be about as efficacious as intravenous injections.

DR. BECHET: I recall an interesting case illustrating what Dr. MacKee has said. The patient had taken bromide by mouth as part of a stomachic tonic. She had, as a result, an extensive bromoderma of the acne type, which rapidly cleared up after the administration of table salt by mouth. In reference to phenobarbital as a substitute for bromide, I have recently had under observation a patient who had a severe pruritus, which began shortly after taking the drug, and which disappeared after it had been withdrawn. The pruritus was not accompanied by any eruption.

DR. ELLER: A point of interest in this discussion might be the fact that many patients who suffer from epileptic attacks respond favorably to treatment with bromide and unfavorably to treatment with phenobarbital. The only way to keep epilepsy in such patients under control is to give them bromides and, at the same time, sodium chloride either by mouth or by injection.

CICATRICES FROM ELECTRODESICCATION. Presented by DR. BECHET.

A. D., a man, aged 29, stated that he had had a large number of digitate warts on the bearded region for two years. Seven weeks previously, attempts had been made to remove them by electrodesiccation. At the time of presentation, seven weeks after the treatment, he had large, pitlike scars, several of them from one-

fourth to one-half inch in diameter, giving rise to much deformity. Many of the warts were still present. The case was of interest because of the extensive scarring resulting from a poor technic.

BASAL CELL EPITHELIOMA IN A BOY OF EIGHTEEN. Presented by DR. BECHET.

A. P., a boy, aged 18, stated that at the age of 10 he noticed on the right side of his nose a white spot with a blackish spot in its center. This blackish lesion slowly underwent progressive inflammatory changes, and at the time of presentation consisted of a pearly, rounded, bordered lesion with an ulcerating center. Biopsy showed an infiltration of basal cells in nests with a slight amount of pigment.

DISCUSSION

DR. KINGSBURY: I should be somewhat disinclined to accept the diagnosis without reservation. I do not thing the clinical appearance alone enables one to make a definite diagnosis.

DR. TRAUB: The histologic changes indicating basal cell epithelioma on a white spot might well be explained on the basis that the whole lesion is a morphea-like type of epithelioma. This type occurs frequently in adults. I treated two patients with such a condition at the Skin and Cancer Hospital only last week, but in these the borders showed a little more infiltration.

DR. WHITEHOUSE: I do not hesitate to accept the diagnosis of epithelioma, but I have had only one case in a patient as young as this one. The man was 28 years old but had had it for twenty years. It was resistant to treatment, requiring more than one application of radium to eradicate it.

DR. THRONE: I am inclined to agree with Dr. Traub. I cannot understand the sharp, rectangular shape, which is suggestive of previous treatment of some type.

DR. BECHET: I believe the "white spot" is an extraneous patch having nothing to do with the epithelioma, which has a rounded, pearly border and an ulcerated center. A biopsy was made and the pathologic report was epithelioma. Dr. Fraser, after examining the slide presented tonight, makes a similar report. These facts sufficiently sustain the original diagnosis.

SCHAMBERG'S DISEASE. Presented by DR. TRAUB.

P. S., a school boy, aged 13, presented a condition on the right leg only, of five years' duration. The microscopic examination showed a thin epidermis with a rather atypical basal cell layer. In the upper part of the corium there was a bandlike infiltration composed of lymphocytes, connective tissue cells and dilated blood vessels. There was a granular degeneration of the connective tissue in this area, and there were a number of vacuole-like spaces. There was some long standing chronic inflammation. The Wassermann reaction was negative.

DISCUSSION

DR. THRONE: I cannot make anything of it but Schamberg's disease.

DR. MACKEE: I agree to the diagnosis. There are other diagnoses that might be considered, but Schamberg's progressive pigmentation is the most likely.

DR. WHITEHOUSE: I think Schamberg's disease is the most likely diagnosis, but it is difficult to decide on one examination. It looks like Schamberg's disease.

DR. SCHWARTZ: I agree with the others that it is Schamberg's disease.

DR. GUY (Pittsburgh): Dr. Schamberg reported four cases in which the blood showed high cholesterol content, the cholesterol in one case running as high as 300. This might be of diagnostic value.

DR. TRAUB: Dr. Kingery did some work on the pigment, which is a special type of iron derivative. Perhaps studies along this line would help in a differential diagnosis.

MYCOSIS FUNGOIDES. Presented by DR. WILLIAMS.

The patient first came under observation in May, 1926, presenting an eruption which he then had had since May, 1924. He consulted Dr. Throne, who made a diagnosis of mycosis fungoides, and also others. The condition ran a typical course after that, up and down; it improved under treatment with the roentgen ray, the individual spots yielding, and he held his own. But every little while he had a more profuse eruption than ever before and became discouraged. In addition to the treatment with the roentgen rays he also was given arsenic by injection and sodium thiosulphate.

Therapeutic suggestions were requested.

DISCUSSION

DR. MACKEE: I hesitate to make therapeutic suggestions in regard to this disease before this body, as each member possesses the same knowledge. I advise only that the treatment with the roentgen rays be discontinued as long as possible, and that in the meantime the patient be made as comfortable as he can be made with the conventional dermatologic therapy, reserving the use of the roentgen rays until the disease — which I understand is becoming roentgen ray fast — again becomes amenable to this agent. He has now an acute exacerbation of the disease, which may have occurred spontaneously. While often in the past the roentgen ray has been wrongly blamed for these exacerbations, it is possible that some of them may have been caused by a too rapid absorption of the lesions in the course of roentgen treatment.

DR. HOWARD FOX: I should like to ask Dr. MacKee about Dr. Fordyce's contention that a combination of arsphenamine and the roentgen ray does the most good in these cases.

DR. MACKEE: Taking the cases in my experience as a whole, I have not got any better results with the combination than with the roentgen ray alone, though we all, occasionally, see cases in which the condition clears up under treatment with arsphenamine alone.

DR. TRAUB: This patient has been under treatment for three or four years. He was shown because of the acute exacerbation. We had been treating a number of the small tumors with necrotic centers at biweekly or monthly intervals, four or five areas each time, when suddenly this eruption appeared over the body. It seems to be a toxic eruption. We have given the patient arsenic before, but because he does not tolerate it very well, he could not take enough to do much good. He has responded fairly well to one-unit doses of the unfiltered roentgen ray. In the beginning, the lesions cleared up under about half a unit. The only case of this type that I have seen in which the patient was apparently definitely benefited by arsenical medication was one in which the patient was treated until a secondary exfoliating dermatitis (arsenical) was set up; then the latter condition cleared up under medication with sodium thiosulphate plus local measures. This patient is apparently well now — from four to five years later.

DR. BECHET: I should like to know what the action of sodium thiosulphate would be in mycosis fungoides.

DR. WILLIAMS: He was given the sodium thiosulphate to get rid of the arsenic, to which he did not respond very well; he has not had any sodium thiosulphate for a year or more. I do not think that the administration of sodium thiosulphate had any connection with the outbreak.

A CASE FOR DIAGNOSIS (WARTY LESIONS OF PALM AND DYSTROPHY OF FINGER-NAILS). Presented by DR. HOWARD FOX.

E. J. B., a single woman, a piano teacher, was presented on account of two apparently distinct conditions. On the right hypothenar eminence were three rounded elevations of the size of peas suggesting small warts or callosities. Their

surface was somewhat rough and grayish. They were soft, suggesting the presence of fluid. They were somewhat tender, and one lesion had around it a faintly reddish areola. One of the lesions had previously been incised by a physician, but no fluid had been obtained. There was no ulceration or itching. The first lesion had been present for ten, and the most recent one for four years.

There was also a dystrophic condition of all the finger-nails, most marked in the thumb nails and becoming less so in the other nails toward the little finger. The thumb nails were thickened and showed deep cross furrows and ridges, lack of luster and yellowish discoloration. Other nails showed varying degrees of transverse furrows and ridges, and one nail showed a tendency to be spoon-shape. There was nothing to suggest ringworm at the free border; there was no paronychia, or dermatitis of the surrounding skin, such as psoriasis. The toe-nails were not affected. The patient's parents and one brother and sister, who were living, had never suffered from any similar disturbance of the palm or nails. The patient appeared to be in good health. A fibroid tumor of the uterus had been removed. At the time of the removal, the blood was examined and was said to be normal.

DISCUSSION

DR. HIGHMAN: I have the impression, although it is merely tentative, that the lesions on the palm simulate roughly the tendon gumma sometimes seen in persons with syphilis. I suggest ruling out syphilis.

DR. BECHET: I do not think that the tumors have any connection with the tendon sheaths; they are subcutaneous.

DR. MACKEE: I agree with Dr. Highman that we must rule out the possibility of subcutaneous fibrotic gumma, and we should also consider the aberrant wart.

As to the nails, they look as though affected with coilonychia, together with other congenital dystrophic changes.

DR. ELLER: I agree that the diagnosis of an aberrant wart should be considered. Occasionally, we find warts of the hands and feet that simulate tumors.

DR. WILLIAMS: Apparently there was some fluid in the tumors; they did not all seem solid. I do not know the cause of the deformity of the nails; it looks as if it were dystrophic. On the other hand, I am not convinced that similar changes may not be produced by parasites; it is certain that yeasts and fungi may be found in a great variety of conditions.

DR. WHITEHOUSE: I believe there is no relation between the two conditions; I think the nails are dystrophic, as said by several of the members. As to the tumors, one should first exclude syphilis and then, if necessary to investigate further, make a biopsy.

DR. RULISON: I think the tumor formation is a separate condition. One of the previous speakers seemed to think the tumors were cysts; if they are not cystic, I think they are warts.

DR. HOWARD FOX: I feel as the other members do, that here there are two distinct conditions. Dystrophy of the nails of unknown cause seems to me a suitable diagnosis. This is not a characteristic case of spoon nails, an example of which I have presented. Only one of the nails showed this condition. The eruption on the palm is puzzling. I did not consider syphilis, but thought the lesions might be atypical warts, calluses or possibly synovial lesions.

A CASE FOR DIAGNOSIS (LUPUS ERYTHEMATOSUS). Presented by DR. RULISON.

Miss C. B., aged 27, had always been well, aside from chronic constipation, until late in October, 1928. At that time itching and burning of the lower half of the face was followed by the appearance of erythematous areas on the chin, cheeks and nose. Some of these were circular and others were irregular in outline; their average size was that of an English walnut. The lesions would at first be edematous, then would flatten, scale and disappear, recurring at intervals

of a few days. She made two visits to the Vanderbilt Clinic and was treated by a private physician without improvement.

When the patient was first seen by the presenter, the question of a rotogravure dermatitis was investigated and eliminated. At her first visit, the lesions were violaceous and one on the chin appeared stippled. The patient had been taking 5 grain tablets of cascara sagrada for a long time. An examination by a druggist for phenolphthalein was reported to have yielded a positive result; a later and more thorough examination failed to show any phenolphthalein. Mild ointments of ammoniated mercury and of sulphur aggravated the condition. Five weekly roentgen treatments of one-fourth skin unit each were followed by a disappearance of the eruption. Two weeks later, January 28, the itching and burning recurred, followed by the eruption in the old locations. The teeth showed no disease.

On February 9, without much change in the appearance of the eruption, the itching and burning became severe and the eruption more angry in appearance. During the two weeks preceding presentation, the patient had had only wet dressing and powders and two one-fourth skin unit doses of the roentgen ray.

The case was presented as a probable lupus erythematosus.

DISCUSSION

DR. TRAUB: The case, at present, shows no atrophy and no definite telangiectasia. The little scaling present is not of the typical type, i. e., firmly attached with extensions into follicular openings. My idea is that it is a case of seborrheic eczema.

DR. HIGHMAN: I think it is a case of lupus erythematosus. I am convinced that many of these cases are atypical lupus erythematosus.

DR. WISE: I agree with Dr. Highman.

DR. BECHET: I also agree with Dr. Highman that it is lupus erythematosus. This condition, like everything else, has a beginning, and that beginning is characterized by dark to violaceous red, sharply outlined patches, which are more or less edematous and more or less persistent. The pathognomonic atrophy, hyperkeratosis and scaling are not seen early in the disease.

DR. ELLER: I agree with Dr. Highman. The patient has some infiltration and scaling, and the color favors a diagnosis of lupus erythematosus.

DR. WHITEHOUSE: I think the condition is lupus erythematosus; she has had it only three or four months, and one would not expect much atrophy in that time.

DR. HOWARD FOX: I am inclined to the diagnosis of seborrheic eczema largely because at one time the eruption yielded to the roentgen rays, and that, in my experience, does not happen with lupus erythematosus. I think the roentgen ray constitutes a valuable therapeutic test between lupus erythematosus and seborrheic eczema. From the comparatively short duration, the lack of telangiectasia and the former response to roentgen therapy, I am inclined to believe it is seborrheic eczema.

DR. RULISON: Since the duration of the eruption has been only a few months, there is no telangiectasia or typical scaling. The eruption did clear up after five doses of the roentgen ray, but there was a preceding history of the eruption having subsided without the use of this agent. The patient says that she has an attack of intense itching followed by burning and that then the eruption comes out. At its height, there is definite edema, which gradually quiets down and is followed by some scaling. I used roentgen treatment with the idea that there might be a seborrheic element present, but am inclined to think that lupus erythematosus is the most logical diagnosis.

LOCALIZED TELANGIECTASIA. Presented by DR. HOWARD FOX.

T. N. B., born in England, first noticed the eruption presented about five years ago. It consisted at the outset of a red patch about the left angle of the jaw, and gradually increased in extent. His father had a florid complexion, and the patient

himself had always lived an outdoor life. He drank moderately, gave no history of gastro-intestinal disorders and had never suffered from syphilis. There was no history of nosebleed or other hemorrhage. Examination showed an irregularly shaped patch of redness, about 7 by 8 cm., extending from the angle of the jaw upward to the hair line, and from the front of the ear back to the mastoid. On close inspection, the patch was seen to be made up of closely aggregated and interlacing telangiectases. There were no "cayenne pepper" spots and no circinate lesions. There was no scaling or itching. Scattered over other parts of the face were a few discrete telangiectases.

DISCUSSION

DR. WILLIAMS: It struck me as a simple telangiectasia from exposure to sun and weather—more on one side than the other, although it is on both sides. I do not think it is angioma or in any way related to it. He gave a history of long exposure during his life.

DR. WHITEHOUSE: I agree with Dr. Williams that it is due to sunburn and exposure. He is much out of doors. I think that that would account for the whole condition in one with his type of skin.

DR. HIGHMAN: While Dr. Williams is apparently correct, it cannot be ruled out that the patient may have incipient angioma serpiginosum, which does begin with uncharacteristic lesions that persist for months or years before the disseminated eruption appears. I should not rule out the possibility that it is an early case of angioma serpiginosum.

DR. WISE: I should rule out angioma serpiginosum because the few cases we have seen are entirely different in appearance from this; the dilated blood vessels are visible and distinct instead of having the fine, diffuse appearance which this case presents. What Dr. Highman said applies to some few cases that are said to begin as one spot and to spread then by peripheral extension, forming rings and small circles; but I do not consider this case to be angioma serpiginosum; I agree with Dr. Williams.

DR. HOWARD FOX: I agree with Dr. Williams.

SCLERODERMA OF GENERALIZED PROGRESSIVE TYPE. Presented by DR. HOWARD FOX.

T. M., a white man, born in Galicia, had come to the United States in 1904 at the age of 17. He had formerly worked in iron foundries and in car shops as a riveter. He had done little work for the past five years. He was a constant smoker of the pipe. He had never used narcotic drugs. He had no recollection of diseases in childhood. He had never suffered from any venereal disease. His parents had died at advanced ages of unknown causes. Three brothers and two sisters were living and well. He was married and had five living children—all apparently in good health. One child had died of throat trouble. His wife had never had any miscarriages. No member of his family had suffered from a disease similar to that which the patient presented.

The disease of the skin began in 1913 as an intense and constant pain in the tip of one finger. One year later, similar pain was felt in all the finger tips, and he noticed a gradual "hardness" of the skin of the fingers, hands, arms, face and, to a less extent, the body. Later there was ulceration of some of the fingertips and interphalangeal joints, the fingers gradually becoming stiff and cold. There was a constant tremor of the hands, made worse by voluntary effort. He suffered from weakness of the legs, especially on walking, and stiffness in the sacro-iliac joint, making it difficult to bend and pick up objects. He also suffered from extreme constipation, the bowels at times not moving for from one to two weeks. Following attacks of constipation, he frequently vomited after meals. He had a good appetite, but found it hard to masticate his food, owing to difficulty in opening his mouth.

Examination showed the patient to be thin, slow in gait and looking chronically ill. He weighed 124 pounds (56.2 Kg.), his normal weight being 160 pounds (72.6 Kg.). His height was 67 inches. He appeared to be of normal intelligence and co-operated fully on being examined.

There was a well marked hide-bound condition of the skin of the fingers, hands and face, and to a less extent of that of the forearms and arms, and still less of that of the trunk. There was partial immobility of the eyelids, as well as great difficulty in opening the mouth. Due to the stiffness of the skin and muscles, the chest expansion was only 1 inch. There were tapering and moderate ankylosis of the fingers, which were bluish and cold. There was no evidence of Raynaud's phenomena. The nails showed moderate dystrophic changes. The hair of the axillae and trunk was thin, and there was a notable absence of pigmentation in any part of the cutaneous surface. Sweating was diminished on the affected areas.

Examination of the ears, including hearing, showed nothing abnormal. The pupils were irregular, though they reacted normally to light and accommodation. The teeth were in poor condition, many of them missing. The thyroid gland was small but palpable. Examination of the heart, lungs and abdomen showed nothing abnormal; the liver and spleen were not palpable. The pulse was full, easily compressible, the rate being 72. The blood pressure was 130 systolic and 90 diastolic on an average of several readings. With the exception of a tremor of the hands there were no neurologic abnormalities.

The urine contained no abnormal ingredients (it was not examined for the presence of arsenic). The Wassermann test of the blood was negative. A blood count showed slightly over 5,000,000 red cells, and an average (from two counts) of 12,000 leukocytes. The differential blood count showed an average (from two counts) of 65 polymorphonuclears, 32 lymphocytes and 3 mononuclears and transitionals. The basal metabolic rate was plus 2. Chemical examination of the blood showed 11.1 mg. of sugar. A radiogram of the hands showed contraction deformity in the distal interphalangeal joints of both hands and marked atrophic changes in the distal phalanges of both thumbs and, to a less extent, in the fingers. There was also some localized sclerosis in the shaft of the middle phalanx of the right middle finger. Fluoroscopic examination and radiograms showed an increase in gastric peristalsis and a filling out of the duodenum and stomach. A radiographic gastro-intestinal series showed evidence of pylorospasm, but none of ulcer or carcinoma. At the end of seventy-two hours there was retention in the colon as far back as the cecum. Previous treatment had been symptomatic and unsatisfactory.

DISCUSSION

DR. BECHET: Has any one an idea as to the reason for the relative frequency of this condition in women as compared with men? It seems to me that this is the first case in a man that I have seen in many years, and it is so common in women.

DR. HOWARD FOX: It is true that more women than men are affected.

A CASE FOR DIAGNOSIS (ERYTHEMA MULTIFORME BULLOSUM?) Presented by DR. TRAUB.

M. M., aged 26, born in the United States, a stenographer, presented lesions of the face and trunk. The trouble had begun five weeks before. The lesions on the chest were practically all blebs, appearing on normal skin. The lesions on the back were typical of erythema multiforme, later developing blebs on the erythematous areas. Examinations of the nose and throat showed cryptic tonsils as questionable foci, and an eczema of the canals of the ear, with a slight discharge of foul odor. Examination of the teeth revealed nothing notable. There was no history of the taking of drugs before the appearance of the eruption. There had been no recent vaccination or injection of any vaccine within six months. The lungs showed a few moist râles at the bases.

The heart was slightly enlarged, with a systolic murmur at the apex; the rate was 80, and the rhythm irregular, indicating fibrillating heart. The blood

pressure was 105 systolic and 55 diastolic. The condition of the heart was that of a mitral lesion associated with auricular fibrillation, partially compensated. With her occasional attacks of dizziness, cyanosis of the nails and definite asthmatic attacks, not alone due to pollen, an electrocardiograph and examination by roentgen ray were indicated as a final checking up. Her breathlessness and attacks of palpitation further bore this out. As the tonsils were infected and the cervical nodes enlarged, it was considered advisable to have a tonsillectomy done to prevent further cardiac damage. The patient had a profound nervous background.

The basal metabolism, estimated by the Harris-Benedict method, was +1.7 per cent and by the Du Bois method, 4.1 per cent, the average being 1.2 per cent.

The blood showed sodium chloride 454.3; sugar 88.1, urea nitrogen 10.2 and uric acid 2.54.

The spinal fluid showed sodium chloride 697.1, sugar 50.9 and urea nitrogen 9.4.

DR. WISE: I regard this as erythema multiforme bullosum, the type of case in which the condition usually improves readily; it is the type in which the patient is liable to have lesions on the lips. It is not pemphigus in any aspect of the case, in my opinion.

DR. MACKEE: I agree that it is probably erythema multiforme of bullous type. At the same time, there are lesions here suggestive of pemphigus; the bullae develop on apparently normal skin, and bullae occur around healing lesions or healed lesions. We see this more commonly in pemphigus than in erythema multiforme.

DR. WHITEHOUSE: This is the type that I have always called toxic bullous erythema; it may bear some resemblance to pemphigus, but I feel practically sure that it will all clear up under the administration of blue mass, colocynth and ipecac pills from two to three times a month and daily ascending doses of sodium salicylate in a rhubarb and soda mixture.

DR. WILLIAMS: I think it is erythema multiforme bullosum. The question of etiology is what interests me most; I do not know what has caused this. I agree with Dr. Whitehouse, but what the toxin is, I do not know.

DR. TRAUB: One of the most interesting features about the case was that on the first examination the patient had only a few lesions, and following a lumbar puncture she had an exacerbation, with increased formation of blebs. The attack following the puncture was probably a mere coincidence.

A CASE FOR DIAGNOSIS (TUBERCULOSIS?). Presented by DR. TRAUB.

S. K., aged 16, a clerk, was born in Poland, but had been in this country for eight years. She had been troubled with the condition presented for three years. On the right side of the face and on both ears were deeply scarified areas, bordered by a raised area of erythema, circinate in outline. The Wassermann test was negative.

DISCUSSION

DR. WHITEHOUSE: I think that it is lupus erythematosus with secondary infection leading to ulceration and scarring.

DR. VAN DYCK: I think this is a case of lupus pernio.

DR. HIGHMAN: Lupus pernio is close to what I had in mind, though nothing I have ever seen is precisely like this. The border looks like sarcoid of Boeck, which is related to the deeper form of Darier-Roussy and that in turn to the erythema induratum of Bazin. I was wondering whether this was not so constructed, a border-line form leading to destruction. I do not see why lupus pernio is not as good a conception of the lesion as mine.

DR. BECHET: I do not think the scarring is due to any secondary infection, but it does, in my opinion, suggest an aberrant cutaneous tuberculosis.

DR. MACKEE: Dr. Highman has expressed my views. I think it is tuberculous, possibly acne telangiectodes or Boeck's sarcoid or a combination of two or more entities falling within the group of tuberculous dermatoses.

DR. ELLER: I incline to Dr. Highman's views, but I also feel that the lesions may be neurotic excoriations.

DR. WILLIAMS: I agree with Dr. Whitehouse that the diagnosis is lupus erythematosus.

DR. HOWARD FOX: This is an unusual clinical picture, suggesting sarcoid in some places and hydroa in others. I should make a tentative diagnosis of tuberculid, pending the histologic examination.

ALOPECIA TOTALIS AND FOLLICULITIS. Presented by DR. ELLER.

R. S., a man, aged 26, from the Post-Graduate Skin Clinic, noticed a falling-out of hair in January, 1921. It continued until July of the same year; at this time there was a complete alopecia of all the hairy regions of the body. During this period, his finger-nails lost their luster and became brittle. His physical condition at the time was good with no other symptoms. Prior to 1921, he had had thick, black hair and a heavy beard, but several years previous to that date his hair had at one time fallen out in patches. From January, 1921, to the time of presentation, the patient was under the care of numerous physicians and received a great variety of treatments, consisting of applications of ultraviolet light, carbolic acid and various salves. Internally, various glandular extracts were taken, with injections of pilocarpine and, in addition, over seventy injections of arsphenamine. The latter were always followed by violent reactions. The Wassermann tests of the blood were negative, and physical and neurologic examinations disclosed no other abnormal condition, except that a roentgenogram taken of the base of the skull showed the pineal gland to be calcified and the sella to be pressing, apparently, on the pituitary gland.

For four years, the patient had been taking small quantities of pituitrin. In 1922, buried tonsils were removed, and in 1926 a diseased appendix was excised. There was an erythematous, papulopustular eruption on the face and the scalp that had been present for three months and had proved recalcitrant to treatment.

DISCUSSION

DR. MACKEE: The eruption seems to be a pustular folliculitis of the scalp and the face, with a great deal of erythema—a staphylogenic folliculitis, occurring in a patient who has a low specific resistance to this organism.

DR. WHITEHOUSE: It is undoubtedly a folliculitis, coccogenic in origin.

REPORT OF CASE PRESENTED AT THE DECEMBER MEETING.

DR. TRAUB: I have a slide and a histologic report on the case presented at the last meeting as prurigo nodularis or hypertrophic lichen planus. Dr. Barthel and Dr. Jessup examined the slide and stated that the section is almost identical with one of a typical case of prurigo nodularis, which Dr. Williams loaned to the hospital. However, until Dr. Barthel saw Dr. Williams' slide she rather favored the diagnosis of hypertrophic lichen planus. Therefore, there still seems to be some basis for doubt.

The microscopic examination of the section showed a thick parakeratotic scale, parts of which appeared crustlike. The epidermis was irregular, especially as to the size and shape of the pegs. The basal cell layer was irregular in one area, which suggested lichen planus, as the infiltration of the corium was especially dense in this region and extended up and into the epidermis. In this area there was a small intradermal vesicle. The granular layer was irregularly thickened and absent in places. There was an almost banklike infiltration, which stopped sharply at the upper level of the midcorium. Blood vessels in the midcorium were dilated and surrounded by endothelial cells and lymphocytes. The rest of the section appeared normal, and there was no inflammatory reaction about the nerve fibers. The rest of the infiltration was composed of the same type of cell.

DR. TRAUB: I have a report on the case of the boy, W. M., with granuloma annulare, presented at the December meeting. The patient had a single lesion on the base of the right thumb. The question brought up by Dr. Highman was whether it might not be a leukemic infiltration. He asked that a blood count be made.

The red cell count was 4,430,000; the white cell count, 10,800; hemoglobin, 100 per cent. The differential count showed polymorphonuclear neutrophils 70 per cent, lymphocytes 23 per cent, mononuclears and transitionals 6 per cent, eosinophils 1 per cent and basophils absent, 100 per cent cells counted. The red cells appeared normal.

DR. WILLIAMS: I can report on the case of tinea barbae on the upper lip, presented at the December meeting. At that time I reported a rise of temperature on admission, and mycelia on the upper lip and in the skin over the lower jaw, and neither thereafter. The patient had a normal temperature for two weeks; then the temperature went up again, and another lesion developed on the right side of the upper lip, specimens from which showed mycelia. A little later, the man developed a lichenoid tricophytide involving the whole trunk. Cultures were all without growths in spite of repeated attempts.

We started treatment with a compound solution of iodine diluted, and now the patient is nearly well. He has no active lesions and only one small fluctuating lesion under the chin. The preparation used was one part iodine, two parts iodide of potash and 200 of water. One and a half cubic centimeters was given, first in, 20 and then in 50 cc. of sugar solution. We first tried plain water, but that irritated him. He had two roentgen treatments when he first came in, and was treated with boracic acid dressings. He had the injections every second day, at least twelve or fifteen of them in all.

MINNESOTA DERMATOLOGICAL SOCIETY

D. D. TURNACLIFF, M.D., *Secretary*

Feb. 6, 1929

W. H. GOECKERMAN, M.D., *President, Presiding*

A CASE FOR DIAGNOSIS (LICHEN PLANUS OR PITYRIASIS RUBRA PILARIS?). Presented by DR. FREEMAN.

A girl, aged 8, presented a keratoderma of both palms and soles. Over the backs of the hands were numerous small, red, slightly elevated papules. There were no plugs present on the dorsum of the phalanges. There was a moderate degree of scaliness of the scalp, and the face was somewhat reddened and smooth and had an oily appearance.

DISCUSSION

DR. FREEMAN: I excluded the diagnosis of pityriasis rubra pilaris, and thought that the condition was lichen planus. It is definitely not over a week old as the child was examined by a pediatrician in St. Paul a week before presentation and was all right. When she came to my office she complained that her hands and feet were cold and wet.

DR. MICHELSON: Pityriasis rubra pilaris usually is ushered in disguised as either a psoriasis, a seborrheic dermatitis or occasionally a lichen planus. At certain stages it is difficult to make a positive diagnosis. I have had an opportunity to observe some of these patients throughout the duration of the condition, and I am fully convinced that the much discussed plugs found on the dorsum of the phalanges are not an important nor early manifestation. Microscopic examination of early lesions is of some value, and I have found that the first change is epidermal, a mere thickening over the follicular openings. This continues until a plug is formed

and then an infiltrate appears. In the present case, the keratoderma of the palms and soles, the waxy, masklike expression of the face and the profuse scaling of the scalp cause me to make the diagnosis of Devergie's disease.

DR. SWEITZER: The condition has many of the characteristics of pityriasis rubra pilaris; the color and the sharply defined edges. The fact that it came on suddenly has no bearing on the case. In the first place we do not know what causes pityriasis rubra pilaris, and the fact that a pediatrician examined the child a week ago does not mean anything; the condition has to start sometime. I think it is a rather typical case of pityriasis rubra pilaris.

DR. BUTLER: It may be something like pernio, in which the mother used strong irritating oil. I should hestiate to call that condition pityriasis rubra pilaris.

DR. GOECKERMAN: I should like to add my diagnosis. I believe that there are enough symptoms to warrant a diagnosis of pityriasis rubra pilaris. If Dr. Freeman is fortunate enough in his treatment, we may not have an opportunity to watch the patient or see her later, but I rather think we shall.

PITYRIASIS LICHENOID CHRONICUS. Presented by DR. MICHELSON.

A man, aged 24, said that he had an eruption on the trunk which had been present for eight years and that he had been treated for psoriasis by his family physician over a period of months. There were present over the trunk and arms, various sized, light brown, elevated papules, bearing an adherent scale. There was some thickening of the skin over the knees. There was no leukoderma. The Wassermann reaction was negative, and the biopsy made from a lesion on the chest showed observations consistent with the clinical diagnosis.

DISCUSSION

DR. MICHELSON: I should like to know whether any of the members have tried pilocarpine for this condition. So many continental physicians on pityriasis lichenoid chronicus report the use of pilocarpine with good results.

GENERALIZED ECZEMA. Presented by DR. FREEMAN.

A woman, aged 22, presented a diffuse dermatitis of the face, arms and legs. There was marked lichenification at the antecubital and popliteal spaces. The patient said that the condition became aggravated from time to time but that it never completely disappeared.

DISCUSSION

DR. FREEMAN: This patient is presented for suggestions as to therapy. The condition has been present for twenty-one years.

DR. MICHELSON: I should suggest the use of autogenous blood serum in this type of dermatitis.

DR. SWEITZER: We usually have these cases on hand. As far as the diagnosis goes, we call them sensitization eczema for want of a better term. Many are almost an exfoliative dermatitis. The treatment we have found most beneficial has been whole baths; leaving the patient in the bath for two or three hours at a time. Some of the patients come back with a relapse. I have not tried autohemotherapy, but it is simple and easy to do.

DR. GAGER: I think that these cases are clinical entities and are fairly common. I believed previously that the condition was allergic eczema, but lately I am not so certain about that. My reason for this is that experimental inoculations for sensitization do not yield any particular results in these cases. Lately I am leaning toward the idea that a neuropathic condition may be the underlying cause. There may be some basis in the vegetative nervous system for this condition. I recall a young man whom I have been treating at times for several years, on whom I tried ultraviolet light. He could stand all kinds of ultraviolet light and not get much tanning. When these treatments were discontinued, he would relapse. I gave him

a few doses of typhoid vaccine and he got more benefit from these than from anything else. I saw his brother this afternoon and he said that the patient is worse again. Every time he has an emotional upset he has a violet outbreak of pruritic eczema. He has a bad neuropathic history.

PSEUDO PELADA OF BROCQ. Presented by DR. MICHELSON.

A woman, aged 30, said that she had noticed two small reddened areas on the crown of her scalp ten years before presentation and that these areas had gradually enlarged and had itched and been somewhat painful. There were no signs of inflammation other than the redness. Gradually, the hair had thinned in these areas, and at the present time the spots were almost devoid of hair and were atrophic, glistening and thin. No therapy had been of avail.

ALOPECIA AREATA. Presented by DR. MICHELSON.

A girl had a complete alopecia of the entire crown of the head, making a circular area about 8 inches (20.32 cm.) in diameter. The hair had come out suddenly and at the time of presentation was growing in. There were no other areas, and the appearance was that of a defluvium due to roentgen rays.

DISCUSSION

DR. BUTLER: I thought that the second case suggested epilation due to chemical measures.

DR. MICHELSON: We have taken the history carefully from the mother, and she said that no roentgen or beauty parlor treatment had been given.

DR. GOECKERMAN: It looks as though the condition might be alopecia following the use of the roentgen rays.

ALOPECIA AREATA OCCURRING IN FATHER AND DAUGHTER. Presented by DR. MICHELSON.

The patients were 47 and 20 years, respectively, and the father had a typical alopecia areata involving the scalp and eyebrows. The condition had been present for two months. Two weeks following the onset of the alopecia in the father, the daughter had a complete shedding of the hair on the entire scalp, the eyebrows and the eyelashes. The cases had been observed over a period of six weeks, and in that of the father the hair was rapidly returning. There was no sign of regrowth as yet in the daughter.

LUPUS ERYTHEMATOSUS WITH LESIONS OF THE MUCOUS MEMBRANE. TWO CASES. Presented by DR. MICHELSON.

Two men, aged 19 and 27, said that they had had lesions of the skin for several years past and that recently the lips had become involved. The lesions were typical for the discoid type of lupus erythematosus and were situated on the cheeks, the forehead and the mucosa of the lower lips. Therapy was to be intravenous injections of a gold compound.

DISCUSSION

DR. NICHELSON: I want to mention one point in connection with the gold therapy and that is that dosage seems to make no difference in the response. I see just as marked improvement following small doses as I do following large ones. Therefore, I have made it a rule to use a minimal dose.

DR. SWEITZER: With the few patients I have treated with a gold compound, I have run them up to a dosage of 100 mg. I have noted that some leading men, who have a larger amount of material, give two doses a week instead of one and they get better results. In the ones in whom I did not get a local reaction I have given as high as twenty doses.

DR. GOECKERMAN: Dosage in treatment with gold compounds is rather interesting. Three years ago, I began the use of a German preparation of 4 amino-2 aurothiophenol carbolic acid, starting out with small doses. My first patient responded well to minimal doses. He is well today. As time went on, I became less timid. In the recent cases I have given doses ten times as large, but I got no better results and am now going back to the smaller dosage. My average dose for gold and sodium thiosulphate at present is 50 mg., three times a week. I have tried 100 mg., but this caused undesirable symptoms. I can say also that 4 amino-2 auro-thiophenol carbolic acid has given me no better results than gold and sodium thiosulphate.

LICHEN SIMPLEX CHRONICUS. Presented by DR. SHAPIRO.

A woman had had a lesion on the back of the neck for two years. The lesion was oval, about 1 by ½ inch (2.5 by 1.27 cm.), fairly well marked off from the surrounding skin and reddish, the skin appearing thin and wrinkled. There was a great deal of itching in this spot, and, in addition, the woman had an uncontrollable itching over the back of the shoulders and arms, as indicated by long scratch marks covered by crusts.

DISCUSSION

DR. MICHELSON: Neurotic excoriations are almost always on the exposed parts of the body. The face, scalp and hands are by far the most frequent areas involved.

HEMORRHAGIC SARCOMA OF KAPOSI. Presented by DR. MICHELSON.

A Jewish man, aged 54, said that a number of hard, red, elevated nodules had developed on the nose and on the toes during the past few months; they caused him very little inconvenience but were progressing in size and number. Microscopic examination of a lesion of the face revealed a sharply circumscribed collection of fibrous tissue in which were incorporated numerous blood vessels. There was some pigmentation present beneath the epidermis. Roentgen treatment and arsenic, internally, was to be given.

DISCUSSION

DR. MICHELSON: The microscopic picture in this case corresponds so exactly to the one in Professor Gans' book that they might easily be interchanged. We have seen a number of cases of sarcoma of Kaposi, the last in an Italian and the previous one in a Scandinavian.

DR. GOECKERMAN: I have never had an opportunity to see a case as early as this, but I agree with the diagnosis.

A CASE FOR DIAGNOSIS (LIVEDO RACEMOSA). Presented by DR. MICHELSON.

A woman, aged 21, said that each winter she suffered from painful extremities, especially after being exposed to the cold. At the time of presentation her legs from the knees down had become purplish and showed many dilated vessels. The extremities were extremely cold to the touch. The hands were not involved, although they were clammy and covered with cold perspiration. The case was shown as one of circulatory disturbance. No origin could be discovered by most careful constitutional examination, all tests, roentgen examinations and the like being negative.

DISCUSSION

DR. MICHELSON: I think that this case fits in with the group which begins with marked cutis marmorata and goes on to marked circulatory disturbance of the livedo type. The process is a progressive one, and unless a definite etiologic factor can be ascertained one must leave the cause severely alone as unknown.

ERYTHEMA INDURATUM OF BAZIN. Presented by DR. SHAPIRO.

The patient had lesions on the backs of both legs as high as the knee. There were multiple lesions, which seemed reddish on the surface and rather deeply situated; they were somewhat painful, but there was no ulceration nor itching anywhere. The patient had marked regression of the lesions under arsphenamine therapy.

DISCUSSION

DR. GOECKERMAN: Unless I want to try the gold preparations, I use arsphenamine. I have continued with the use of it, and still have to agree with what Stokes wrote years ago. We failed in one case about a year ago and then tried the treatment with a gold compound with rest in bed. The patient's condition was absolutely rebellious to arsphenamine.

DR. MICHELSON: I recently saw a woman who had a marked erythema induratum, and the lesions had been curetted by a surgeon. Healing was prompt and scarring was no more marked than with any other type of treatment.

SYPHILITIC SARCOID OF SUBCUTANEOUS TYPE. Presented by DR. MICHELSON.

A woman, aged 46, said that eight years previously she had noticed the development of painless, progressively enlarging nodes on the forehead, back and chest, and that a marked edema of the lower eyelids had occurred which had gradually increased so that at the time of presentation the lids showed marked pouching. On examination there were noted large, diffuse, subcutaneous plaques involving the entire forehead and right cheek, an area over the right shoulder and one on the back. None of the plaques was smaller than 5 inches (12.7 cm.) in diameter. The skin was adherent and dark blue. The consistency was decidedly hard. There was ulceration in the center of two areas, but the patient said that this followed biopsy. The area on the right cheek showed a scalloped border. In the right breast could be palpated a huge mass, the size of an orange, which was not adherent to the skin but had the same consistency as the nodes in the other areas. Biopsy showed a slight atrophy of the overlying epidermis and a deep-seated nonspecific infiltrate which contained a large number of plasma cells. The Wassermann reaction was negative three times. Physical examination by internists showed no aortic change. X-ray pictures of the chest were negative, as were the neurologic observations. The patient said that her husband had been treated for syphilis. Because of the character of the infiltrate in the histologic picture, antisyphilitic therapy had been started, and there was a marked diminution in the size of the plaques after two injections of neoarsphenamine.

DISCUSSION

DR. MICHELSON: This is unquestionably the most extraordinary skin condition that I have seen in the past year. The patient was treated by Dr. Irvine over a period of months, although the diagnosis of the condition was undetermined. She was recently admitted to my service. We considered leprosy, sarcoid of the Darier-Roussy type and syphilis. The microscopic picture ruled out leprosy, but did not entirely rule out sarcoid. After I examined the sections from the deep lesions I decided to use neoarsphenamine therapy because of the large number of plasma cells and because of their perivascular arrangement. The response plus the history of infection of the husband led me to make a definite diagnosis of syphilis of the subcutaneous type.

DR. GOECKERMAN: I think that we should see this case later, and should have the patient at the next meeting. If the condition is syphilis, every one of the skin lesions should clear up with scarring.

DR. FREEMAN: I should not have made a diagnosis in that case. Just because the condition responded to arsphenamine would not prove that it was syphilis; I do not know what it is.

DR. SWEITZER: My diagnosis is syphilis. The peculiar factor in this case is the disturbance of the circulation of the face. There is diffuse infiltration of the forehead; that I have never seen in syphilis; still I think the whole condition is syphilis.

ULCUS CRURIS FOLLOWING FRACTURE OF THE LEG. Presented by DR. SHAPIRO.

Two years before presentation the patient, a man, had a compound fracture of the leg, which healed showing good union of the bone, but there had been a persistent ulcer over the site of the break which had steadily refused to heal, regardless of therapy. At the time of presentation, at the site of injury, the level of the skin appeared depressed, the skin was very thin, smooth and atrophic, and about the edge there was an oozing which at times dried up and then returned. The patient also had a small varicose vein in this leg.

DISCUSSION

DR. MICHELSON: We have begun the injection of the veins in every case of marked dermatitis of the lower legs in which varicosities are present. We are using the 60 per cent invertose syrup, and the results certainly warrant a continuation of this practice.

DR. SWEITZER: I should put on an Unna cast in this case.

EPIDERMOPHYTOSIS. Presented by DR. SHAPIRO.

The lesions have existed on both feet and legs for the past two years. The remarkable fact about this case was the extent of the involvement, running all the way from the toes, up to the knee on both sides. The lesions on the legs were mostly of a papular, squamous type, and itched extremely. The skin over the feet showed the most involvement. Between the toes there was typical maceration. A good deal of varied therapy had been used, but the patient had done best when treated with Whitfield's ointment. He was brought to this meeting for suggestions as to therapy.

DISCUSSION

DR. SWEITZER: I should like to suggest the use of chrysarobin. I think that if the members would think occasionally of chrysarobin and use it in these cases, they would find that it helped. I use a 10 per cent strength in collodion, painting it on for four or five days, particularly between the toes. Occasionally it will work excellently on the hands too. It is not well applied on the hands on account of the color.

DR. GAGER: I have tried mercurochrome-220 soluble in some of these cases and think that it is rather good. With regard to the point that there is no use trying to prevent them, my opinion is that a saturated solution of sodium hyposulphite tends to prevent recurrence, although I cannot say this positively. I have had one or two patients with conditions which cleared up.

ACNE CACHECTICORUM. Presented by DR. SWEITZER.

J. M., aged 45, presented indolent acneform lesions with considerable scarring over the lower part of the back and chest. These cutaneous lesions began with pulmonary tuberculosis in 1925.

LUPUS MILIARIS DISSEMINATUS FACEI. Presented by DR. MICHELSON.

A man, aged 27, an automobile mechanic, was presented with a history of having had pulmonary tuberculosis two years previously; he had been discharged by his physician who thought that the condition was arrested. Four weeks before presentation about twenty small, red, round, soft papules had appeared on his face and forehead. These were grouped on the upper lip and over the cheeks. Glass

pressure revealed typical small apple jelly nodules as are seen in lupus vulgaris. A few of the lesions had a small yellow center, but no pus could be expressed. Biopsy had been made which revealed: a granuloma situated in the papillary portion of the corium which was composed of closely packed epithelioid cells and a few giant cells. About the granuloma were strands of brown infiltrate. There was no evidence of necrosis. The therapy to be used will consist of microcauterization and the administration of neoarsphenamine.

DISCUSSION

DR. SWEITZER: I am inclined to think that the condition is papulonecrotic tuberculid.

DR. MICHELSON: There are three common types of cutaneous tuberculosis which occur on the face, i. e., lupus vulgaris, acnitis and the disseminated type of lupus. There is a distinct difference in the three conditions. Lupus vulgaris is resistant, tends to remain in situ and spreads, making a large plaque. Acnitis is the deep-seated type of papulonecrotic tuberculid which occurs on the face. It begins in the deep layer of the skin, makes fairly large lesions and necroses, leaving scars. The disseminated type of lupus is a hematogenous infection. It is superficial, usually follicular, occurs in crops and is self-limited, often disappearing without leaving a trace or leaving only slight poxlike scars. Microscopically, this condition shows minute tuberculomas situated in the papillary portion of the cutis.

DR. GOECKERMAN: I should like to subscribe to what Dr. Michelson says in regard to terminology. I think these lesions have been called to our attention more forcibly in recent years than before. One point particularly struck me, and that is that one can overlook these for acne rosacea. There are cases in which marked facial congestion is present. The pseudopustule is also somewhat surprising. The lesions are probably tuberculids and not true local tuberculosis as is lupus vulgaris.

SEBORRHEIC DERMATITIS. Presented by DR. BUTLER.

A young woman presented definite crusts covering the whole scalp. The condition was present also in the pubic region. When I first saw her I thought the condition might be favus, but there was considerable weeping. The case was extremely refractive.

DISCUSSION

DR. GAGER: This is interesting to me because I have had a sort of epidemic of dermatitis of the scalp and neck. In the last few days, I have had five or six cases of it due to the use of "lucky tiger." One man had eczema which was almost as severe as that of the girl presented.

DR. NICHOLSON: The case Dr. Butler referred to was shown at the summer meeting at Duluth. The patient had extensive chronic seborrhea with acute exacerbations. She stayed in the hospital over two months, receiving daily Alpine light treatments to the scalp and boric acid packs. She has remained entirely free from the condition for about four months.

DR. GOECKERMAN: I have watched these cases with a good deal of interest. I do not believe one can cure more than 75 per cent of the patients with this condition. I have had them in the hospital for weeks and months and have tried them on many different combinations. The main thing is perseverance over a long time, treating the scalp particularly, as the scalp seems to be the nidus of the trouble.

DR. SWEITZER: In the treatment for seborrheic dermatitis four remedies may be used: sulphur, salicylic acid, resorcin and tar. In some cases of seborrheic dermatis, I am convinced that the diet is faulty; especially do the patients eat too much fat. I have had cases in which the condition cleared up with change of diet. I recall one patient who had an intractible case. He was a traveling salesman and went to creameries to sell goods. I finally asked him about his diet, but it seemed to be correct. He said that almost every time he went into a creamery he drank a glass of cream. I told him to omit the cream. When he came to see me the

next week he was almost well. I put these patients on a diet restricted for fats. The first thing I should do about Dr. Butler's patient would be to eliminate the fats from his diet. Sometimes resorcin works better than salicylic acid. I have applied coal tar back of the ears. In some cases, I paint the affected area with silver nitrate.

DR. GOECKERMAN: In regard to Dr. Sweitzer's statement, I have seen two cases that were apparently due to diet only, that is, to an excessive amount of fat, especially butter. When the patient used a minimum amount of butter, the condition cleared up.

SAN FRANCISCO DERMATOLOGICAL SOCIETY

ERNEST CHIPMAN, M.D., *Chairman*

Feb. 15, 1929

H. J. TEMPLETON, M.D., *Secretary*

ACUTE SCLERODERMA. Presented by DR. TORREY.

A woman, aged 31, presented indurated lesions suggestive of scleroderma on the arms, face, neck and legs. These began recently following an illness with influenzal symptoms and fever. At the age of 15, she had a similar attack which likewise began with influenzal symptoms but which cleared up suddenly after lasting two or three weeks.

DISCUSSION

DR. TAUSSIG: In discussing this patient with Dr. Miller, he suggested that the diagnosis of scleroderma be held in abeyance on account of the absence of the changes ordinarily seen in true scleroderma.

DR. TEMPLETON: Could this be a case of dermatomyositis?

DR. WAY: Dr. Templeton's suggested diagnosis of dermatomyositis is an excellent one. We should hardly expect scleroderma to have cleared up so rapidly before. While I have never seen dermatomyositis so widespread as it is here, certain aspects of the case favor that diagnosis. A biopsy should be made and the tissue stained with orcein, to bring out the elastic fibers. In scleroderma the outer elastic fibers show atrophy while the deeper ones are often hypertrophic. The parallel arrangement of the fibers is also suggestive.

DR. SCHOFF: I think that the term acute scleroderma is a misnomer in this case. Scleroderma is more chronic in its development and the connective tissue formation could not be so rapid as in this case.

DR. MAYNARD: The hardening is deeper than in the skin—can it be analogous to sclerema neonatorum?

DUHRING'S DISEASE. Presented by DR. O. F. MONTGOMERY.

A young man presented a widespread eruption consisting of grouped excoriated papules with an arciform arrangement. One year before presentation these first appeared on the scapulae and then on the wrists. They had spread gradually. The pruritus had been intense. Marked pigmentation had occurred over the bony prominences.

The case was presented with a tentative diagnosis of dermatitis herpetiformis, although I do not feel dogmatic about the diagnosis. The signs and symptoms have been suggestive, but there have been no vesicles at any time. This patient's occupation places him under a heavy nervous strain, which is often the case in patients with this disease.

DISCUSSION

DR. TAUSSIG: What experience have the members of the society had in the treatment for dermatitis herpetiformis with the St. Louis diet? This consists of a strict vegetarian diet, including the omission of milk, butter and eggs.

DR. ALDERSON: This is a case of dermatitis herpetiformis. The absence of vesicles should not count against this diagnosis.

DR. SCHOFF and DR. MAYNARD agreed with the diagnosis.

MATCHBOX DERMATITIS. Presented by DR. TAUSSIG.

The patient presented an erythematous, scaly, sharply marginated patch of dermatitis on the lower right side of the abdomen, somewhat larger than the size of a palm. It had been noticed for about three months and was very pruritic. The area was located under his vest pocket, and at the time of his first visit to the clinic this pocket was filled with Diamond matches.

DISCUSSION

DR. TEMPLETON: The extremely sharp margination would seem to speak against the diagnosis of matchbox dermatitis. The border is as clearcut as that of tinea cruris.

DR. CULVER: Such sharp margination is characteristic of matchbox dermatitis. This feature is also seen in hatband dermatitis.

DR. GRAVES: The patient has been applying "White Fox Ointment."

PITYRIASIS RUBRA PILARIS. Presented by DR. TEMPLETON.

Mr. K., aged 45, was presented at the last meeting as offering an example of pityriasis rubra pilaris, but some of the members thought that the condition was lupus erythematosus. At their suggestion he was given weekly injections (fifteen) of gold sodium thiosulphate in doses of from 25 to 200 mg. There was some slight improvement of the process on the face but in general the disease had not been modified. The ears, cheeks and nose were covered with a slightly scaly erythematous dermatitis. There was no atrophy. The skin over the dorsum of both hands was reddened, drawn and slightly infiltrated. There was a prominence and horniness of the hair follicles. On the dorsum of each of the proximal phalanges there were from fifteen to twenty of the characteristic nutmeg grater-like follicular plugs. The Wassermann reaction was negative. A biopsy showed hyperkeratosis, follicular plugging and some parakeratosis.

DISCUSSION

DR. TAUSSIG: The patient's condition is more suggestive of lupus erythematosus now than at the first presentation. The failure of the application of a gold and sodium thiosulphate is not conclusive evidence of the incorrectness of this diagnosis.

DR. CULVER: Clinically, one would have to make the diagnosis of pityriasis rubra pilaris. The symmetrical distribution on the dorsa of the hands and the helix of the ear suggests this diagnosis.

DR. GRAVES: If lupus erythematosus had existed for fifteen years would not one find atrophy? No atrophy is apparent.

DR. MAYNARD: I favor the diagnosis of pityriasis rubra pilaris.

DR. ALDERSON: This looks like an atypical case of lupus erythematosus. Failure to obtain results after only fifteen injections of a gold compound, particularly when the dosage was large, does not necessarily affect the diagnosis. It would be worth while continuing the injections, giving the same more frequently and in smaller doses.

DR. WAY: In regard to Dr. Graves' question, atrophy is not always present in the disseminated follicular type of lupus. The clinical appearance of the disease hardly warrants the diagnosis of pityriasis rubra pilaris, which is essentially different.

LEPROSY. Presented by DR. O. F. MONTGOMERY.

A man, aged 24, born in Tahiti, presented a macular eruption on the trunk, tender tumors over the elbow, ulceration of the left cornea, excoriation of the nasal septum and enlargement and tenderness of the right ulnar nerve. There was no erythroderma, anesthesia or pruritus. The family history was negative for leprosy. Although this apparently is a case of leprosy, mycosis fungoides will be ruled out.

DISCUSSION

DR. WAY: I should not hesitate to agree with the diagnosis of leprosy made by Dr. Montgomery.

DR. ALDERSON: This looks very much like a case of leprosy. It should be easy to demonstrate the presence of lepra bacilli. Frequently, failure to find organisms is due to faulty technic, the Hansen bacillus being less acid fast than the tubercle bacillus, particularly when alcohol is used in decolorizing. Small doses of potassium iodide to increase nasal secretion may bring forth the organisms. The freezing of favorable areas with carbon dioxide snow to produce bullae is of great diagnostic assistance. Within a few hours it will be found that the fluid is full of lepra bacilli. We employ this method frequently at Stanford University.

LEPROSY. Presented by DR. TEMPLETON.

Mr. M., aged 27, born in Mexico, presented an eruption which appeared one month before presentation together with general malaise, aching and fever. A similar attack occurred some years before presentation, but the eruption disappeared. At the time of presentation, he showed many smooth fawn-colored patches over the arms, back and chest. Many of these were markedly anesthetic. The outer halves of the eyebrows were thin. The right ulnar nerve was about the size of a lead pencil. Both hypothenar eminences were atrophied.

PIGMENTATION OF THE WHOLE BODY (ARSENICAL?). Presented by DR. TORREY.

A woman, aged 40, of Scotch-Irish descent, went to the University of California Clinic one week before presentation. At the time of presentation she was in the hospital for a complete examination which had not been completed. Pigmentation began three years previously. She had had injections of iron cacodylate before that time. Just after these injections, itching and pigmentation appeared. Three years before presentation, hysterectomy was done. The liver was three fingerbreadths below the costal margin. The blood count was normal. The Wassermann reaction was negative. Biopsy was done but has not been reported. The blood pressure was 85 systolic and 65 diastolic. The stools had been clay colored for the last two years. The sclera were icteric. She had lost 12 pounds (5.4 Kg.) during the winter of 1928. She tired easily.

DISCUSSION

DR. WAY: Recently, I saw two patients with similar cases of generalized pigmentation plus innumerable depigmented spots. Both patients had taken solution of potassium arsenite for many years for a supposedly unknown skin disease. Strange to say, within two weeks after the discontinuation of the arsenic, both developed dermatitis herpetiformis.

DR. ALDERSON: In this poor light, it looks like a typical case of arsenical pigmentation with the many small white spots profusely scattered throughout the

same. The absence of hyperkeratosis is worth noting, however. We have several patients with typical cases of arsenical pigmentation under our care. One of them is in a patient with psoriasis who took fifteen Asiatic pills (1/64 grain [0.001 Gm.] each) for five years. The psoriasis has been held in abeyance, but he presents the usual profuse hyperpigmentation with many small whitish spots and typical hyperkeratosis of the palms and soles. On the cheeks and nose he had several hyperkeratoses, one of which had become epitheliomatous.

DR. MAYNARD: I should suggest the diagnosis of bronze diabetes on account of the enlarged liver with icterus. I believe that this diagnosis should be definitely ruled out before arsenical pigmentation is considered. The scars could be the result of an old dermatitis herpetiformis.

DR. GRAVES: The depigmented lesions are all scars. A dermatologist of standing in Los Angeles has said that she had had Duhring's disease.

DR. SCHOFF: The clay-colored stools and enlarged liver are not absolutely compatible with the diagnosis of arsenical pigmentation.

DR. O. F. MONTGOMERY: Addison's disease should be considered. There is a low blood pressure, and the skin is smooth. There are no keratoses.

DR. TEMPLETON: Addison's disease certainly deserves consideration.

NOTE.—A later report to the Society stated that a positive diagnosis of hemochromatosis had been reached.

HYPERKERATOSIS OF THE PALMS AND SOLES (ARSENICAL?). Presented by DR. EPSTEIN.

A man, aged about 60, went to the University of California Clinic two and one-half months before presentation, complaining of an eruption on the palms and soles which began about thirty years before. By a process of elimination, other causes of keratoderma (syphilis and gonorrhea) were dismissed and the causative factor was thought to be arsenic. The Wassermann reaction was +. A biopsy was to be performed. The patient was being treated with sodium thiosulphate intravenously, but no improvement had been observed at the time of presentation.

DISCUSSION

DR. ALDERSON: Examination of deep scrapings and cultures for a fungus would be helpful here. It must be remembered that scrapings are often disappointing, but cultures on properly made mediums are almost always satisfactory. The hyperkeratoses in this case are certainly not of the type so often seen in arsenical cases. Has the patient had systemic invasion of the gonococcus?

DR. WAY: Because of the chronicity of the disease, the miliary type of the hyperkeratoses and the pitlike depressions occurring at many of the follicle mouths, one is surprised that porokeratosis has not been considered. The history of the case does not warrant the suggested diagnosis.

DR. O. F. MONTGOMERY: When the biopsy is taken, the sections should be stained for arsenic according to Osborne's technic.

DR. TEMPLETON: After the sodium thiosulphate has been given the urine should be examined for arsenic, as the elimination of arsenic is hastened by these injections.

DR. CULVER: I believe that a therapeutic test for syphilis is in order.

DR. TAUSSIG: On account of the positive observations on the serum I should favor a therapeutic test, though I doubt that the keratoses are syphilitic.

NOTE.—DR. EPSTEIN later reported that this patient had been under observation since being presented before the society. He had received thirty-six intravenous injections of sodium thiosulphate, 1 Gm. each, without improvement. The urine had been tested for arsenic by Dr. Leake, and arsenic had been found to be present. A biopsy had been done and showed a hyperkeratosis without any

evidence of a granuloma. Osborne's method of staining for arsenic was being used, and later a report would be made on the observations. The patient had syphilis and arteriosclerosis. He was past 60 years of age, and the history was unreliable. He gave no history of having taken arsenic. The observation of arsenic in the urine seemed conclusive in making the diagnosis arsenical keratoderma.

A Case for Diagnosis. Presented by Dr. Schoff.

This man came to Dr. Schoff in 1928 complaining of lesions on both cheeks. The buccal surfaces of both cheeks showed leukoplakia-like lesions which were fissured and vegetative. These lesions were first noted in 1921. In 1926, he received radium therapy over a period of seven months. There was no adenopathy. A general physical examination was negative for syphilis. The Wassermann reaction was negative. Suggestions were requested in regard to diagnosis and treatment.

DISCUSSION

Dr. Alderson: This is probably a case of low-grade malignancy. One must bear in mind that there are all degrees of malignancy. I should advise making a biopsy and at the same time completely destroying the lesion by means of the cautery or electrocoagulation.

Dr. Culver: This is a slowly progressive epithelioma. The radiation which was given was probably insufficient. If treatment with radium is used at all, I should suggest massive doses.

Dr. Taussig: This is a relatively slow-growing, late metastasizing type of epithelioma, but it should be treated radically. I should suggest thorough curetting followed by electrodesiccation. I believe that radium treatment for buccal leukoplakia is unsatisfactory.

Dr. Way: It is my impression that the patient has been undertreated. It is rather unusual for this type of case to clear up under radium therapy. Complete destruction of the entire lesion by electrocautery should be carried out, followed by roentgen irradiation of the cervical glands.

Dr. Templeton: I should consider this a slowly growing epithelioma developing on leukoplakia and should favor treatment by electrothermic methods rather than with radium. After the lymphatics around the lesions are blocked with rather superficial electrocoagulation, a piece should be removed for biopsy, and then the whole area should be coagulated.

Note.—At a later meeting of the society, Dr. Schoff submitted a report of a biopsy which showed no malignancy. The members thought that another should be taken from some other area, as the clinical appearance was suggestive of malignancy.

A Case for Diagnosis. Presented by Dr. Templeton.

Mrs. C., aged 28, Chinese, was presented. For eleven years both feet and hands had been covered with evenly distributed reddened hyperkeratosis. This involved the ventral and dorsal surfaces and the lateral borders. It ended abruptly on the wrists and ankles, giving the appearance of gloves and oxfords. Four months before presentation, after remaining stationary for eleven years, the condition began to spread up the arms and legs. New independent patches, the size of a palm, had appeared on both knees. Large areas had appeared on the back and on the nape of the neck. All of the lesions were extremely sharply marginated, a reddish brown, slightly thickened, slightly scaly and mildly pruritic. The Wassermann reaction was negative, and the urine was normal. Scrapings and cultures for fungi were negative. The diagnoses which had been considered were epidermomycosis and some peculiar hyperkeratotic condition related to keratoderma palmaris et plantaris.

DISCUSSION

DR. ALDERSON: This young Chinese mother was first seen by me more than two years ago. She has aged very much since then, and the hyperkeratosis has extended a great deal. When I first saw her it was at her home in Chinatown. She was walking around barefooted in rooms with bare floors and had ample opportunity to pick up a mycotic infection. Scrapings then were negative for fungi and cultures gave negative results. With our improved mediums, however, we should expect some success at this time. One should never be satisfied only with direct examination of scrapings. The extension of some of the lesions over the limbs and neck is peculiar. Could not that be due to medication? All of the lesions, however, could be due to a fungus infection.

DR. MAYNARD: I favor the idea of a fungus infection, as the border is definitely of the type in which fungi are found. I do not think that the appearance is compatible with any other diagnosis.

DR. O. F. MONTGOMERY: I should consider the diagnosis of pityriasis rubra pilaris. The symmetry speaks against the diagnosis of a mycosis.

DR. CULVER: I suggest that the diagnosis of dermatitis exfoliativa should be considered.

DR. WAY: There is no suggestion of pityriasis rubra pilaris here. The thickening and dystrophy of the nails lead one to think of a fungus infection. Scrapings and negative cultures are not conclusive. Many fungi are cultured with great difficulty and necessitate the use of various mediums before a growth is obtained.

DR. CHIPMAN: Without wishing to disparage the search for fungi in any obscure dermatosis, I must confess that the lesion on the nape of the neck is to me more suggestive of lichen simplex chronicus than any epidermomycosis.

NOTE.—Dr. Templeton later reported to the society that heavy doses of thyroid and ovarian substance had caused most of the eruption to disappear. The portion on the hands and feet was unimproved. This case was presented as pityriasis rubra pilaris at the clinical meeting of the American Dermatologic Association at San Francisco, July, 1929. The diagnosis was accepted.

BROOKLYN DERMATOLOGICAL SOCIETY

ARTHUR M. PERSKY, M.D., *Secretary*

Feb. 18, 1929

WILLIAM H. BEST, M.D., *Presiding*

FORDYCE'S DISEASE. Presented by DR. BEST.

S. H., a white woman, aged 53, a housewife, born in the United States, presented an eruption which began about two years previous to presentation, when the patient noticed an abrasion on the right side of the tongue, which was caused by a broken dental plate. This abrasion soon healed, with burning and soreness as a sequel. She had always been in good health and aside from the condition of the mouth felt entirely well. Her family history was unimportant.

There were numerous yellowish-white, slightly elevated, flat, round and angulated, discrete and confluent papules, the size of a pinhead, on the mucous membranes of the cheeks and lips. The blood count was normal.

DISCUSSION

DR. ABRAMOWITZ: This disease is so common that it is almost considered a normal phenomenon in the mouths of most people. Many such patients develop subjective symptoms when they notice the eruption in the mouth.

DR. GRAHAM: I do not think that the subjective symptoms have anything to do with Fordyce's disease.

DR. WALZER: The condition in the mouth is common. In some cases, the condition is extensive and practically symptomless. The subjective symptoms have nothing to do with the adenomatous lesions.

PARAPSORIASIS. Presented by DR. WALZER.

L. P., a boy, aged 5 years, had the usual diseases of childhood. The eruption was of one year's duration. The entire body, extremities and a little of the face were covered with many scattered, superficial, noninfiltrated lesions, varying in size from that of a pinhead to that of a dime, oval or round, red and covered with a thin, almost silvery scale, which when forcibly removed resulted in slight hemorrhage, but not the punctate form of hemorrhage seen in psoriasis. On the sides of the body there was a tendency for the lesions to assume a retiform arrangement. The palms, soles, scalp and mucous membranes were free from lesions.

DISCUSSION

DR. CHARGIN: I agree with the diagnosis and that this type of the disease at times clears up as a result of treatment or independently.

DR. WALZER: I agree with Dr. Chargin that in these cases the condition often clears up by itself and that there is no specific treatment.

ARSENICAL DERMATITIS. Presented by DR. GAUVAIN.

I. C., a married man, aged 40, was born in Porto Rico. He had been a wall paper printer for two years. In the course of his work, he had to mix paints. Originally, these were mixed from powders, but in September, 1928, his employer began using ready made paints. The patient immersed his hands in the pail to mix the paints more readily. In the early part of January, 1929, he developed a papular eruption over the entire body. One week later he stopped work, and a physician treated the condition with ointments, for about four weeks. This resulted in great improvement, and the patient returned to work for only one day, February 11. His condition became so aggravated that he again discontinued work. There was continued increase in the eruption until he appeared at the Clinic three days before presentation, at which time his body was covered with a bright red, papular eruption which was lichenoid on the hands and forearms. He was given 1 Gm. of sodium thiosulphate intravenously. This was followed by marked improvement.

DISCUSSION

DR. ABRAMOWITZ: I am willing to agree that this patient has a dermatitis caused by some irritant like benzine or other chemicals used in the manufacture of paint. I understand that arsenic is no longer allowed to be used in this industry. The fact that he is improving under treatment with sodium thiosulphate does not necessarily indict arsenic as the offending agent.

DR. THRONE: Arsenic can be absorbed through the skin as can any other mixture. There may be absorption in three ways: through the skin, through the alimentary canal and through the respiratory canal. If Dr. Gauvain will get a specimen of urine, I shall determine the quantity of the arsenic in it.

DR. GAUVAIN: I cannot agree with Dr. Abramowitz that this is dermatitis venenata, because the eruption has always been papular, and is not localized to the areas of contact. Furthermore, I believe that dermatitis venenata would have appeared much earlier in the course of his occupation. I can, however, understand how the gradual absorption of arsenic by the skin, the mouth and inhalation could produce arsenical dermatitis after this period of time. The clinical response seems to substantiate this diagnosis.

ROENTGEN EPITHELIOMA. Presented by DR. WALZER.

A. H., a tailor, aged 54, married, had generalized psoriasis for fifteen years. About ten years previous to presentation, he was given two roentgen treatments, one to the elbow and one to the backs of the hands. The patient claimed that shortly after this treatment both hands became tender, and about two weeks later a surgical operation was performed on each hand.

When presented, he exhibited a generalized guttate psoriasis. On the dorsal surface of the left hand there was a marked roentgen dermatitis with telangiectasia and atrophy. There was considerable contraction of several fingers. Over the second joint of the middle finger, there was an ulceration, the size of a pea, a probable epithelioma. The right hand was similarly affected.

DISCUSSION

DR. WALZER: I should like to know whether the use of the roentgen rays for psoriasis is justified.

DR. BEST: I should like to know whether arsenic in the skin sensitizes the skin to the roentgen rays.

DR. ABRAMOWITZ: This man was treated about nine years ago, and surely by no dermatologist. As he received only two roentgen treatments at short intervals, the dose must have been almost an erythema unit or perhaps more, for such sequelae to develop. It is needless to state that such a form of treatment is entirely improper. No one recommends roentgen therapy as a first line of attack for psoriasis. It may be used after other dermatologic procedures have failed to bring about results. In such instances, no matter whether the lesions are small, large, few or many, if improvement is noticed after the first few treatments, I see no reason to discontinue them until the patient is cured. With fractional unfiltered doses and weekly exposures, ten or more treatments may be given without any fear of roentgen dermatitis. If the patient has received considerable arsenic medication and at the same time has been overtreated with the roentgen rays, it seems to me that the chances for sequelae and arsenical keratoses, and the resultant epithelioma that is apt to develop, are considerably increased. It has been shown recently that colloidal lead is still more efficacious in the treatment for cancer when used in conjunction with deep roentgen therapy than when used alone.

DR. CHARGIN: The roentgen rays may be used in psoriasis when there are a few limited patches of the disease which will not respond to any other form of treatment. I see no objection to giving the patients up to ten or fifteen exposures, if given in small doses, once a week or once in ten days. Roentgen rays should not be employed for generalized psoriasis.

DR. BEST: I think that the roentgen rays are a serviceable form of treatment for psoriasis. When large patches are present, I treat most of my patients with the roentgen rays. I give one fourth skin unit every week or ten days, and I should not hesitate to give up to ten or twelve treatments. It is rare that a condition does not respond with less treatment than that, if it is going to respond at all.

ERYTHEMA INDURATUM. Presented by DR. BERKOWITZ.

H. M., a girl, aged 19, single, a student, each winter for four years, had had an eruption of circular, indurated violaceous areas, varying in size from that of a pea to that of a quarter, which broke down, discharged pus and healed, leaving scars. Over the calves of both legs, there were a number of lesions, varying in size from that of a nickle to that of a quarter, with a central necrotic area, having a purulent base and covered with a greenish crust. The anterior and posterior surfaces of both legs presented many fine, thin, slightly depressed scars and slightly dilated blood vessels surrounding them. Her general condition was normal except for an enlarged gland, the size of a walnut, in the inguinal region. The Wassermann reaction was negative; examination of the urine, sputum and blood gave negative results.

DISCUSSION

DR. GRAHAM: As this girl gave a history of recurrences in the winter and as so many of these patients give such a history, it seems to me that warmth is an important element in treatment.

DR. ABRAMOWITZ: Rest in bed and mild local antiseptic treatment are still the best therapeutic methods for this disease. Treatment with a gold compound will accomplish marvelous results in some cases, but I am not so enthusiastic about this form of therapy for Bazin's disease, since I have seen a recurrence develop and progress in spite of repeated injections of a gold compound and sodium thiosulphate. In a previous attack, the same patient responded most favorably to the gold compound.

DR. CHARGIN: I am not in favor of treatment with a gold compound for Bazin's disease, having had the same experience as that related by Dr. Abramowitz. It does, however, produce results in the tuberculids. In a patient with a Darier-Roussy type of sarcoid, whom I presented before this society about a year ago, the condition seems to be responding well. The patient has had about forty injections of a gold compound and sodium thiosulphate, and the improvement noted is marked. In Bazin's disease, rest in bed is productive of the best results.

DR. BEST: A patient with this disease whom I showed at the May, 1927, meeting of this society and whom I subsequently treated with twelve injections of a gold compound and sodium thiosulphate, at weekly intervals, was completely cured. There has been no recurrence for more than a year.

LICHEN PLANUS ANNULARIS AND VITILIGO. Presented by Dr. Walzer.

J. R., a woman, aged 30, married, was in excellent general health. She claimed that the patches of vitiligo on the neck and chest were of about twelve years' duration and the red lesion of six months' duration.

She presented several patches of vitiligo on the chest and upper part of the back. Also, on the chest and back were numerous, coalesced, light red, annular lesions, the size of a dime. Scattered over these parts there were a number of tiny follicular papules, surmounted with what appeared to be a comedo. The papules comprising the annular lesions also contained horny plugs. The papules, however, were flat and shiny.

DISCUSSION

DR. ABRAMOWITZ: There are definite annular white patches in the mouth, which, with the glistening papules on the shoulder, in spite of their unusual arrangement and color, speak strongly in favor of lichen planus. The patches of vitiligo are probably a coincidence.

DR. WALZER: I should like to add that the color of the lesions could be accounted for by the vitiligo—it would make the papules lighter than normally.

CLEVELAND DERMATOLOGICAL SOCIETY

H. J. PARKHURST, M.D., *Reporter*

Regular Meeting, Feb. 28, 1929

C. G. LAROCCO, M.D., *Presiding*

A CASE FOR DIAGNOSIS. Presented by DR. FISHER.

Mrs. B., aged 39, said that large vesicles and bullae had suddenly appeared on the back of her left shoulder five weeks previous to presentation. There had been no pain or itching. New vesicles had continued to appear for three weeks, arising from apparently normal skin. Many small and medium coin-sized superficial crusted ulcers persisted, the affected area being about 12 cm. in diameter.

DISCUSSION

DR. PARKHURST: The localization is suggestive of zoster, even in the absence of subjective symptoms. However, the lesions may be factitial.

DR. LITTMAN: I agree to a diagnosis of zoster.

DR. NETHERTON: It may be zoster, but there was no pain and the bullae were rather large. The present lesions suggest dermatitis factitia.

EXTENSIVE SECONDARY SYPHILID. Presented by DR. COLE and DR. DRIVER.

Mrs. F. G., a white woman, aged 34, presented a generalized small macular eruption of three months' duration. The papules were copper-colored and tended to form medium coin-sized groups. There were split papules at the oral commissures and many perineal condylomas. The Wassermann reaction was strongly positive.

TINEA CAPITIS WITH EPILATION BY THALLIUM ACETATE. Presented by DR. COLE and DR. DRIVER.

M. C., a boy, aged 7, had had tinea capitis for six weeks, with nuchal kerion and a generalized lichenoid trichophytid. On February 7, 3 cc. of sterile milk had been injected intramuscularly, and on February 12, thallium acetate had been administered. The kerion had disappeared within a few days, and epilation had followed on the fourteenth day. The trichophytid was fading.

DISCUSSION

DR. RAUSCHKOLB: Following the administration of thallium acetate, we have observed arthralgia in some cases, and once or twice albuminuria has been found.

DR. CUMMER: Has the hair ever failed to regrow after this procedure?

DR. RAUSCHKOLB: No, but it sometimes takes six months.

DR. DRIVER: The weighing of the drug should be carefully checked.

DR. BARNEY: I would also suggest checking the weight of the drug on different scales. I have observed two reactions: arthralgia and transient albuminuria.

DR. DRIVER: The French use thallium ointment locally to epilate, and toxic signs occasionally appear.

LUPUS ERYTHEMATOSUS; PAPULONECROTIC TUBERCULIDS. Presented by DR. LITTMAN.

S. K., a girl, aged 16, presented numerous, sharply outlined erythematous patches on the face, symmetrically distributed, and varying in size from that of a pea to that of a coin. The scales were adherent, and there were follicular indentations. There were also lesions on the mucosa of the right cheek and nose. Scattered over the hands, forearms and arms were a number of small pea-sized infiltrated erythematous papules, with pronounced central depressions. There was no sign of visceral tuberculosis.

LUPUS ERYTHEMATOSUS; LUPUS PERNIO. Presented by DR. CUMMER and DR. LAROCCO.

S. P., a girl, aged 16, presented faint, small coin-sized atrophic patches on the nose and cheeks, of six years' duration. There was faint erythema and scaling in three of the patches. About the finger-tips were many large pinhead-sized, dull, erythematous areas, with some infiltration; some showed central depression. There were ill-defined, dull, erythematous patches on the knees.

DISCUSSION

DR. RAUSCHKOLB: One must be sure that there is no pulmonary tuberculosis before starting treatment with gold sodium thiosulphate.

DR. NETHERTON: Lately one of my patients developed gold stomatitis, resembling mercurial stomatitis. Improvement followed the administration of sodium thiosulphate.

DR. CUMMER: I observed a similar case of gold stomatitis, lasting three or four weeks. The condition cleared up spontaneously.

DR. COLE: It seems similar to the stomatitis following the administration of other metals, such as mercury or bismuth.

GONOCOCCIC IRITIS. Presented by DR. COLE and DR. DRIVER.

B. P., a man, aged 46, had had a urethral discharge for four weeks and arthritis of the left knee for three weeks. Iritis had been present in the left eye for two weeks, with marked epiphora but no purulent discharge. Ophthalmologists considered the iritis gonococcic. Gonococci had been found in the urethral smears, but not in smears from the affected eye. The Wassermann reaction was negative. It was presented because of its close resemblance to syphilitic iritis.

DISCUSSION

DR. COLE: This is an interesting case, showing a manifestation we do not often see. Objectively it seems no different from syphilitic iritis.

LIPOMATOSIS. Presented by DR. COLE and DR. DRIVER.

B. E., a man, aged 41, had had multiple lipomas since 1917, involving the face, neck, shoulders, right forearm and scrotum. The tumors were very large, constituting a serious deformity. Six lipectomies had been done, and in 1927, the right foot had been amputated because of gangrene. The urine and blood count were normal.

ACHROMIA PARASITARIA (?). Presented by DR. BARNEY.

H. H., a male student, aged 26, said that one year prior to presentation he had noticed the appearance of white spots on the penis and inguinal region, without scaling, redness or itching. These spots had persisted without change. Ten months before the time of presentation, slightly pruritic, scaly, pinkish areas had appeared on the arms. The eruption on the right arm had disappeared after seven months, only to reappear four weeks before presentation; that on the left arm had persisted. For the previous four weeks the eruption had spread rapidly. There had been no treatment. On the flexures of both arms and forearms, adjoining the cubital regions, were numerous depigmented patches, varying in size from that of a pea to half the size of the palm. The borders were slightly elevated and scaly, subacutely inflammatory and fairly sharply circumscribed. There was a similar patch, half the size of the palm, on the extensor surface of the left arm in its middle third. The depigmented areas showed no atrophy or scaling. On the shaft of the penis was a pea-sized area of depigmentation, and there was a similar dollar-sized area, with arcuate border, in the right inguinal region. There were no signs of inflammation in these patches. In the left inguinal region were two linear areas of depigmentation, about 4 cm. long; also pinhead-sized subacutely inflammatory papules, some discrete and others grouped in dime-sized patches. No fungi were found in the scales. A biopsy specimen was presented.

DISCUSSION

DR. PHILLIPS: The lesions were suggestive of lupus erythematosus or atrophic lichen planus, but the histologic picture excluded both possibilities.

DR. DRIVER: Aside from the depigmentation, the process seems typical of tinea corporis. The hands and feet are apparently not infected.

DR. BARNEY: This case resembles those reported by Dr. Pardo Castello; he cultivated an *Aspergillus* from some of his cases.

DR. COLE: There are some areas of depigmentation of the hair, of interest in connection with the other features of the case. Dr. Barney's diagnosis is probably correct.

BROMODERMA. Presented by DR. BARNEY.

Mrs. G. A., aged 30, presented a painful, pustular and verrucous eruption on the inner aspect of the lower third of the left leg, of six weeks' duration. She had taken medicine for nervousness for the previous four months. There was a sharply outlined palm-sized patch, surrounded by many acutely inflammatory papules and pustules, varying in size from that of a large pinhead to that of a coin. There was an associated fetid odor. The test for bromine in the urine (Belote) was strongly positive.

DISCUSSION

DR. COLE: It is unusual to see so deep an involvement limited to one area.

DR. BARNEY: To hasten the elimination of the bromine, saline solution is given intravenously. Under this treatment the eruption may flare up at first, resembling a Herzheimer reaction clinically, a relatively rapid improvement ensuing.

TUBERCULOSIS ORIFICIALIS. Presented by DR. COLE and DR. DRIVER.

E. C., a man, aged 35, was presented because of an ulcerative pulmonary tuberculosis and tubercle bacilli demonstrable in the sputum. He had lost 30 pounds (13.6 Kg.) in three months. On the gingival surface, below the lower central incisor teeth, was a medium coin-sized ragged ulcer with undermined border, of six weeks' duration.

ACRODERMATITIS CHRONICA ATROPHICANS. Presented by DR. COLE and DR. DRIVER.

Mrs. S. P., aged 38, had first noticed pruritic red areas on her right foot eight years previous to presentation. With itching and burning sensations, the process had gradually spread, involving both lower and upper extremities. There was an extensive symmetrical eruption, most marked on the thighs and legs. The skin was erythematous, atrophic and crinkled, with many visible blood vessels. On the legs were sharply circumscribed, pale, waxy, infiltrated areas, and the skin over both ankles was quite tense, with longitudinal fissures. The right foot showed a definite contracture, and there were several small ulcers on the great toe and ball of the foot. On the left flank, above the iliac crest, was a sharply defined area of atrophy, depressed below the normal skin level. There had been enlargement of the thyroid gland for twelve years. The blood pressure was 106 systolic and 68 diastolic, and the patient was receiving thyroid extract. Biopsy sections were presented.

DISCUSSION

DR. COLE: This condition was separated from scleroderma by Herxheimer. Actual scleroderma may accompany it.

PARAPSORIASIS EN PLAQUES. Presented by DR. LITTMAN.

J. E., a man, aged 50, complained of a generalized eruption of eighteen years' duration, accompanied by a tingling sensation. He said that the eruption had persisted unchanged. There were many dull red, noninfiltrated plaques, with a fine branny scale. One patch on the thigh was infiltrated.

DISCUSSION

DR. COLE: In spite of the long and uneventful course and the absence of pruritus, the indurated area on the thigh suggests mycosis fungoides.

Book Reviews

HANDBUCH DER HAUT-UND GESCHLECHTSKRANKHEITEN. Edited by J. JADASSOHN, with many collaborators. Volume XXII. Soziale Bedeutung Bekampfung Statistics der Geschlechtskrankheiten. Revised by H. Hecht, and H. Haustein. Price, 114 Rm. Pp. 1064. Berlin: Julius Springer, 1927.

This volume is an illustration of the complete way in which in this encyclopedia the whole subject of skin and venereal diseases is considered. Here is a volume of 1,033 pages of text devoted entirely to the social consideration of the venereal diseases. It is in three parts. The first part is devoted to the significance of the venereal diseases, the reason for their spread, their social injury, their economic burden, sources of infection, prostitution, alcohol in venereal diseases and similar topics. The last 100 pages of this part are devoted to the control of venereal diseases and are just as complete. The second part, 500 pages, is devoted entirely to the statistics of venereal diseases and covers every phase of this subject. The third part, 200 pages, considers the epidemiology of syphilis. The authors are men well known in their field, and each subject is considered in the thorough and scholarly way that is characteristic of this work as a whole.

We can but repeat the praise that we have given the work in reviewing former volumes. This volume is a reference work of the highest value.

L'ÉRYTHRO-CYANOSE SYMÉTRIQUE SUS-MALLÉOLAIRE. THÈSE DE STRASBOURG. By DR. ALICE ULLMO. Pp. 97, with 13 illustrations. Mulhouse: M. Riehl.

This excellent monograph is devoted to a survey of the literature plus a personal study of thirty-five cases observed at Pautrier's clinic. The syndrome described is found in young women suffering from venous stasis and is characterized by four cardinal symptoms; its location in the lower third of both legs, a bluish violet tint often mixed with red, a lowered temperature over the affected parts and a diffuse characteristic infiltration. Keratosis pilaris of the limbs is usually present. This disorder is distinguished from Bazin's erythema induratum by an absence of circumscribed nodosites. Almost all of Ullmo's patients presented thyroid and ovarian insufficiency. In addition to treatment directed against those conditions the ultraviolet rays and especially x-rays over Scarpa's triangles have been valuable according to Gouin and Ullmo.

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William H. Guy, Secretary, Jenkins Arcade, Pittsburgh.
Place: Detroit. Time: 1930.

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